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OBSTETRICAL TRANSACTIONS.

VOL. XXIX.

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OF THE

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OF

LONDON.

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FOR THE YEAR 1887.

WITH A LIST OF OFFICERS, FELLOWS, ETC.

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1871 KEILLER, ALEXANDER, M.D., F.R.S. Ed., Physician to the Royal Maternity Hospital, Lecturer on Midwifery and Diseases of Women and Children at Surgeons' Hall, Edinburgh; 21, Queen Street, Edinburgh.

1871 KIDD, GEORGE H., M.D., F.R.C.S.I., Obstetrical Surgeon to the Coombe Lying-in Hospital; 30, Merrion square south, Dublin.

1870 WEST, CHARLES, M.D., F.R.C.P., Corresponding Member of the Academy of Medicine of Paris; 55, Harley street, W. *Pres.* 1877-8.

FOREIGN SUBJECTS.

1872 BARKER, FORDYCE, M.D., Professor of Clinical Midwifery and Diseases of Women at the Bellevue Hospital Medical College, and Obstetric Physician to the Bellevue Hospital; 85, Madison avenue, New York.

1863 BRAUN, CARL, M.D., Professor of Midwifery, Vienna.

1863 FAYE, F. C., M.D., Professor of Midwifery in the University of Christiania.

1866 HUGENBERGER, THEODOR, M.D., à la Maternité et aux Enfants Trouvés Hôpital des Accouchements, Moscow.

1866 LAZAREWITCH, J., M.D., Kharkoff, Russia. *Trans.* 3.

1864 PAJOT, CH. M.D., late Professor of Midwifery to the Faculty of Medicine, Paris.

1862 SCANZONI, F. W. VON, M.D., Professor of Midwifery, Würzburg.

1877 STOLTZ, Professor, M.D. Nancy.

1872 THOMAS, T. GAILLARD, M.D., Professor of Obstetrics in the College of Physicians and Surgeons; 296, Fifth avenue, New York.

1862 VIRCHOW, RUDOLF, M.D., Professor of Pathological Anatomy in the University of Berlin.

CORRESPONDING FELLOWS.

Elected

1873 MARTIN, A. E., M.D., Berlin. *Trans.* 1.

1876 BUDIN, P., M.D., 129, Boulevard St. Germain, Paris. *Trans.* 1.

1876 CHADWICK, JAMES R., M.A., M.D., Physician for Diseases of Women, Boston City Hospital; Clarendon street, Boston, Massachusetts, U.S.

1877 GOODELL, WILLIAM, A.M., M.D., Professor of Clinical Gynæcology in the University of Pennsylvania; Philadelphia, Pennsylvania.

1876 LUSK, WILLIAM THOMPSON, M.D., Professor of Obstetrics, Bellevue Hospital Medical College; New York.

1876 PREVÔT, OSCAR, M.D., Moscow.

1877 STORER, HORATIO R., M.D., Newport, Rhode Island, U.S.A.

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1888.

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1878 ALFORD, FREDERICK STEPHEN, 61, Haverstock hill, N.W.

1883 ALLAN, ROBERT JOHN, L.R.C.P. Ed., Raymond terrace, Hunter River, New South Wales. [Per Alexander Allan, Esq., Glen House, The Valley, Scarborough.]

1873 ALLEN, HENRY MARCUS, F.R.C.P. Ed., 20, Regency square, Brighton.

1887 AMBROSE, ROBERT, B.A., L.R.C.P. & S. Ed., 1, Mount place, Whitechapel road, E.

1878 ANDERSON, IZETT WILLIAM, M.D., 95, Duke street, Kingston, Jamaica. *Trans.* 1. *Hon. Loc. Sec.*

1875 ANDERSON, JOHN FORD, M.D., C.M., 1, Buckland crescent, Belsize park, N.W. *Council*, 1882.

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1866 ANDREWS, HENRY CHARLES, M.D., 11, Addison terrace, Notting Hill, W. *Council*, 1882-3.

1859 ANDREWS, JAMES, M.D., Everleigh, Green hill, Hampstead, N.W. *Council*, 1881.

1888 ANNACKER, ERNEST, M.D. Berlin, St. Mary's Hospital, Manchester.

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1870 APPLETON, ROBERT CARLISLE, The Bar House, Beverley.

1884 APPLETON, THOMAS A, 46, Britannia road, Fulham, S.W.

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1871 ARGLES, FRANK, L.R.C.P. Ed., Hermon Lodge, Wanstead, Essex, N.E. *Council*, 1886-7.

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1861 ARMSTRONG, JOHN, M.D., Green street green, Dartford, Kent.

1886 ASHE, WILLIAM PERCY, L.R.C.P. Lond., The Common, Chislehurst.

O.F. AVELING, JAMES H., M.D., Senior Physician to the Chelsea Hospital for Women; 1, Upper Wimpole Street, W. *Council*, 1865-66, 1872, 1884. *Hon. Sec.* 1873. *Hon. Lib.* 1874-6. *Vice-Pres.* 1877-8. *Board Exam. Midwives*, 1872, 1875-83 (*Chairman*, 1878-83). *Trans.* 9.

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1887 BAILEY, HENRY FREDERICK, The Hollies, Lee terrace, Lee, S.E.

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1880 BALLS-HEADLEY, WALTER, M.D., 127, Collins street east, Melbourne, Victoria.

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1869 BANTOCK, GEORGE GRANVILLE, M.D., Surgeon to the Samaritan Free Hospital; 12, Granville place, Portman square, W. *Council*, 1874-6. *Trans.* 2.

1886* BARBOUR, A. H. FREELAND, M.D. Edin., 24, Melville street, Edinburgh.

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1875 BARNES, R. S. FANCOURT, M.D., Physician to the Chelsea Hospital for Women; 7, Queen Anne street, Cavendish square, W. *Council*, 1879-81. *Board Exam. Midwives*, 1880-2. *Trans.* 2.

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1867 BATTEN, RAYNER W., M.D., Physician to the Gloucester General Infirmary; 1, Brunswick square, Gloucester. *Council*, 1886-7. *Hon. Loc. Sec.*

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1886 BOUSTEAD, ROBINSON, M.D., Brigade Surgeon, Bombay Army, c/o Messrs. Grindlay, Groom and Co., Bombay.

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1880 BRANFOOT, ARTHUR MUDGE, M.B., Superintendent of the Government Lying-in Hospital, Madras, and Professor of Midwifery and Diseases of Women and Children in the Madras Medical College, Pantheon road, Madras. *Hon. Loc. Sec.*

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1876 BRUNJES, MARTIN, 9, York street, Portman square, W.

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1882* BULLER, AUDLEY CECIL, M.D., Oxford and Cambridge Club, Pall Mall, S.W.

1885* BUNNY, J. BRICE, L.R.C.P. Ed., Newbury.

1877 BURCHELL, PETER LODWICK, M.B., 2, Kingsland road, E., and Crofton Lodge, Theydon park, Theydon Bois, Essex. *Council*, 1882-4. *Vice.-Pres.* 1885-7. *Board Exam. Midwives*, 1884-7. *Trans.* 1.

1877 BURD, EDWARD, M.D., M.C., Senior Physician to the Salop Infirmary; Newport House, Shrewsbury. *Council*, 1886-7. *Hon. Loc. Sec.*

1878 BUTLER-SMYTHE, ALBERT CHARLES, M.R.C.P. Edin., 35 Brook street, Grosvenor square, W.

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1887 BUXTON, DUDLEY W., M.D. Lond., 82, Mortimer street, Cavendish square, W.

1886 BYERS, JOHN W., M.D., Physician for Diseases of Women to the Royal Hospital, Belfast; Lower crescent, Belfast.

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1883 CAMERON, CHARLES HAMILTON HONE, L.R.C.P. Lond., Lochiel, Harlesden, Willesden, N.W.

1887 CAMERON, JAMES CHALMERS, M.D., 43, Belmont park, Montreal.

1887 CAMERON, MURDOCH, M.D. Glas., 42, Windsor terrace, Glasgow.

1861 CANDLISH, HENRY, M.D., Physician to the Alnwick Infirmary; 26, Fenkle street, Alnwick, Northumberland.

1863 CARLYLE, DAVID, M.D., 2, The Crescent, Carlisle. *Trans.* 1. *Hon. Loc. Sec.*

1886 CARPENTER, ARTHUR BRISTOWE, M.A., M.B. Oxon., 34, Dingwall road, Croydon.

1872 CARTER, CHARLES HENRY, M.D., Physician to the Hospital for Women, Soho square; 45, Great Cumberland place, Hyde Park, W. *Council*, 1880-2. *Trans.* 4.

1877 CARVER, EUSTACE JOHN, Fairlawn, 635, Fulham road, S.W.

1887 CASE, WILLIAM, 34, Westbourne road, Arundel square, N.

1869 CASKIE, JOHN BOYD, M.D., 19, Tyndale place, Islington, N.

1878 CASKIE, WILLIAM ALEX., M.A., M.B., Manse Court, 17, Main street, Largs, Ayrshire, N. B.

1863 CAYZER, THOMAS, Mayfield, Aigburth, Liverpool.

1875 CHAFFERS, EDWARD, F.R.C.S., 54, North street, Keighley, Yorkshire.

1873 CHALMERS, JOHN, M.D., 43, Caledonian road, N.

Elected

1876* CHAMPNEYS, FRANCIS HENRY, M.A., M.B. Oxon., F.R.C.P., Obstetric Physician to, and Lecturer on Midwifery at, St. George's Hospital, 60, Great Cumberland place, W. *Council*, 1880-1. *Hon. Lib.* 1882-3. *Hon. Sec.* 1884-7. *Vice-Pres.* 1888. *Board Exam. Midwives*, 1883, 1888. *Trans.* 14.

1859 CHANCE, EDWARD JOHN, F.R.C.S., Surgeon to the Metropolitan Free Hospital and City Orthopædic Hospital; 14, Russell square, W.C.

1886 CHAPMAN, CHARLES WILLIAM, L.R.C.P. Lond., Denham house, Goldhawk road, Shepherd's Bush, W.

1867* CHARLES, T. EDMONDSTOUNE, M.D., Cannes, France. *Council*, 1882-4.

1874 CHARLESWORTH, JAMES, 25, Birch terrace, Hanley, Staffordshire.

1886 CHARPENTIER, AMBROSE E. L., M.B. Dur., 129, High street, Uxbridge.

1868 CHILD, EDWIN, "Verulam," New Malden, Kingston-on-Thames, Surrey.

1883 CHILDS, CHRISTOPHER, M.A., M.B. Oxon., 2, Royal terrace, Weymouth. *Hon. Loc. Sec.*

1863* CHISHOLM, EDWIN, M.D., Abergeldie, Ashfield, near Sydney, New South Wales. [Per Messrs. Turner and Henderson, care of Messrs. W. Dawson, 121, Cannon street, E.C.].

1885 CHITTENDEN, THOMAS HILLIER, L.R.C.P. Lond., Whitwell, Welwyn.

1883 CLAPHAM, EDWARD, M.D., 29, Lingfield road, Wimbledon.

1859 CLAREMONT, CLAUDE CLARKE, Millbrook House, 1, Hampstead road, N.W.

1887 CLARK, FRANCIS WILLIAM, L.R.C.P. Lond., The Infirmary, Croydon.

1879 CLARKE, REGINALD, South Lodge, Lee park, Lee, S.E.

O.F. CLAY, CHARLES, M.D., 39, Queen street, Blackpool.

1876 CLAY, GEORGE LANGSFORD, West View, 443, Moseley road, Highgate, Birmingham.

Elected

O.F. CLAY, JOHN, Professor of Midwifery, Queen's College, Birmingham; Allan House, Steelhouse lane, Birmingham. *Council*, 1868-69. *Vice-Pres.* 1872-4.

O.F. CLEVELAND, WILLIAM FREDERICK, M.D., Stuart villa, 199, Maida vale, W. *Council*, 1863-64. *Vice-Pres.* 1875-77, 1887-88. *Trans.* 1.

1881 CLOSE, JAMES ALEX, M.B., Summerfield, St. Clair Co., Illinois, U.S.

1865* COATES, CHARLES, M.D., Physician to the Bath General and Royal United Hospitals; 10, Circus, Bath.

1882 COATES, FREDERICK WILLIAM, M.D., St. John street, Salisbury. *Hon. Loc. Sec.*

1878 COCKELL, FREDERICK EDGAR, Jun., Holly Lodge, Forest road, Dalston, E.

1875 COFFIN, RICHARD JAS. MAITLAND, F.R.C.P. Ed., Alwington house, Baron's court, West Kensington, W.

1878 COFFIN, THOMAS WALKER, 79, Queen's crescent, Haverstock hill, N.W.

1875* COLE, RICHARD BEVERLY, M.D. Jefferson Coll. Philad., 218, Post street, San Francisco, California, U.S.

1884 COLLINS, WILLIAM JOB, M.D., B.S., B.Sc. Lond., F.R.C.S. Eng., 1, Albert terrace, Gloucester gate, N.W.

1877 COLMAN, WALTER TAWELL, Hon. Surgeon to the Brighton Hospital for Women; 87, Buckingham road, Brighton,

1885 COOK, PHILIP INKERMAN, M.D., Marmora House, Honor Oak, S.E.

1866 COOMBS, JAMES, M.D., Bedford.

1873 COOPER, FRANK W., Gainsborough house, Leytonstone, E.

1874 COOPER, HERBERT, L.R.C.P. Ed., Rosslyn hill, Hampstead, N.W.

1875* CORDES, AUG., M.D., Privat Docent at the University of Geneva; 12, Rue Bellot, Geneva. *Trans.* 1.

1883 CORNER, CURSHAM, 128, Mile End road, E.

Elected

1860 CORRY, THOMAS CHARLES STEUART, M.D., Senior Surgeon to the Belfast General Dispensary; Ormeau terrace, Belfast. *Council*, 1867. *Hon. Loc. Sec.*

1859 CORY, FREDERICK CHARLES, M.D., Portland villa, Buckhurst hill, Essex. *Council*, 1867-69. *Trans.* 1.

1875 CORY, ROBERT, M.D., Assistant Obstetric Physician to St. Thomas's Hospital; 73, Lambeth Palace road, S.E. *Council*, 1879-81, 1884-5. *Vice-Pres.* 1887-88. *Trans.* 1.

1886 COX, JOSHUA JOHN, M.D. Ed., 54, Gildabrook road, Eccles, Manchester.

1869 COX, RICHARD, M.D. St. And., Theale, near Reading. *Trans.* 1.

1877 CRAWFORD, JAMES, L.K.Q.C.P.I., Ightham, Sevenoaks.

1882 CREASE, JAMES ROBERTSON, F.R.C.S. Ed., 2, Ogle Terrace, South Shields.

1881 CREASY, JAMES GIDEON, Rectory lodge, Brasted, Sevenoaks.

1883 CREMEN, PATRICK JOHN, M.D., 4, Camden place, Cork.

1876 CREW, JOHN, Higham Ferrers, Northamptonshire.

1881 CRONK, HERBERT GEORGE, M.B. Cantab., Repton, near Burton-on-Trent.

1886* CROSS, WILLIAM JOSEPH, M.B., Horsham, Victoria, Australia.

1875* CULLINGWORTH, CHARLES JAMES, M.D., F.R.C.P., Obstetric Physician to, and Lecturer on Obstetric Medicine at, St. Thomas's Hospital; 46, Brook street, Grosvenor square, W. *Council*, 1883-5. *Vice-Pres.* 1886-8. *Trans.* 3.

1862 CUMBERBATCH, LAWRENCE TRENT, M.D., 25, Cadogan place, Belgrave square, S.W. *Council*, 1868-70. *Vice-Pres.* 1878.

1859 CURGENVEN, J. BRENDON, 11, Craven hill gardens, Bayswater, W. *Council*, 1870-72. *Trans.* 8.

1885 DAKIN, W. RADFORD, M.D., Obstetric Physician to Out-Patients, Great Northern Central Hospital; 57, Welbeck street, Cavendish square, W. *Trans.* 1.

Elected

1868 DALY, FREDERICK HENRY, M.D., 185, Amhurst road, Hackney Downs, N.E. *Council*, 1877-9. *Vice-Pres.* 1883-5. *Trans.* 2.

1882 DAMBRILL-DAVIES, WILLIAM R., 101, Piccadilly, Manchester.

1884 DARWIN, GEORGE HENRY, M.R.C.P., The Cedars, Albert park, Didsbury, near Manchester.

1883 DAVIDSON, CHARLES, M.D. St. And., 29, Cassland road, Hackney, E.

1876 DAVIES, GOMER, L.R.C.P. Ed., 9, Pembridge villas, Bayswater, W.

1884 DAVIES, JOHN, 91, New North road, N.

1885 DAVIES, WILLIAM MORRISTON, M.D., 55, Gordon square, W.C.

1877 DAVSON, SMITH HOUSTON, M.D., Campden villa, 203, Maida vale, W.

1878 DAY, EDMUND OVERMAN, Assistant Surgeon to the Royal Infirmary for Children and Women, Waterloo Bridge road; 78, Waterloo road, S.E.

1880 DAY, WILLIAM HANKES, Surgeon to the City Prisons, Norwich; 3, Surrey Street, Norwich. *Trans.* 1.

1859 DAY, WILLIAM HENRY, M.D., Physician to the Samaritan Free Hospital for Women and Children; 10, Manchester square, W. *Council*, 1873-75. *Vice-Pres.* 1885-6.

1877 DEWAR, JOHN, L.R.C.P. Ed., 132, Sloane street, S.W.

1885 D'MONTE, DOMINICK A., M.D., Bandora, Bombay.

1887 DODSON, ARTHUR EDWARD, L.R.C.P. and L.M. Ed., Windermere villas, Earlsfield, Tooting, S.W.

1879 DOLAN, THOMAS MICHAEL, M.D., Horton house, Halifax.

1886 DONALD, ARCHIBALD, M.A., M.D. Edin., St. Mary's Hospital, Manchester.

1879 DORAN, ALBAN H. G., F.R.C.S., Surgeon to Out-Patients, Samaritan Free Hospital; 9, Granville place, Portman square, W. *Council*, 1883-5. *Hon. Lib.* 1886-7. *Hon. Sec.* 1888. *Trans.* 6.

1887 DOVASTON, MILWARD EDMUND, 81, Queen's crescent, Haverstock hill, N.W.

Elected

1880 Downes, Denis Sidney, L.K.Q.C.P. I., 55, Kentish town road, N.W.

1884 Doyle, E. A. Gaynes, L.R.C.P., Colonial Hospital, Port of Spain, Trinidad.

O.F. Drage, Charles, M.D., Hatfield, Herts. *Council*, 1861-4. *Trans.* 1.

1885 Drage, Lovell, M.A., M.B., B.S. (Oxon), The Small House, Hatfield.

1871 Drake-Brockman, Edward Forster, F.R.C.S., L.R.C.P. Lond., Surgeon-Major; Superintendent Eye Infirmary, Madras; Professor of Physiology and Ophthalmology, Madras Medical College. [*Per* Messrs. Richardson and Co., East India Army Agency, 13, Pall Mall, S.W.]

1884 Drake, Charles Henry, 204, Brixton hill, S.W.

1878 Dring, William Ernest, L.R.C.P. Ed., Buckhurst hill, Essex.

1884 Duke, John C., The Glen, Lewisham, S.E.

1886 Dukes, William Profit, L.R.C.P. Ed., 75, Brick lane, Spitalfields, E.

1883 Duncan, Alexander George, M.B., 25, Amhurst park, Stamford hill, N.E.

O.F. Duncan, James, M.B., 8, Henrietta street, Covent garden, W.C. *Council*, 1873-74.

1882 Duncan, William, M.D., Assistant Obstetric Physician to the Middlesex Hospital; 6, Harley street, W. *Council*, 1885-6, 1888. *Trans.* 1.

1871 Eastes, George, M.B., F.R.C.S., 69, Connaught street, Hyde park square, W. *Council*, 1878-80.

1883 Eccles, F. Richard, M.D., Examiner for the College of Physicians and Surgeons, Ontario; Professor of Physiology, Western University; 1, Ellwood place, Queen's avenue, London, Ontario, Canada.

1867 Edis, Arthur W., M.D., Obstetric Physician to, and Lecturer on Midwifery at, the Middlesex Hospital; 22, Wimpole street, W. *Council*, 1873-74. *Hon. Sec.* 1874-77. *Vice-Pres.* 1878-80. *Board Exam. Midwives*, 1878-9. *Trans.* 8.

Elected

1879 ELDER, GEORGE, M.D., C.M., Surgeon to the Samaritan Hospital for Women, Nottingham; 17, Regent street, Nottingham.

1879 ELKINGTON, ARTHUR GUY, Surgeon-Major, Grenadier Guards, 52, Gillingham street, Eccleston square, S.W. *Council*, 1886-7.

1878 ELLERY, RICHARD, L.R.C.P. Ed., Plympton, Devon.

1873 ENGELMANN, GEORGE JULIUS, A.M., M.D., 3003, Locust street, St. Louis, Missouri, U.S.

1884 ENGLISH, THOMAS JOHNSTON, M.D., 128, Fulham road, S.W.

1875 EWART, JOHN HENRY, Eastney, Devonshire place, Eastbourne.

1875 EYELEY, JOSEPH FREDERICK, L.R.C.P. Lond., 5, Hill-park crescent, Plymouth. *Hon. Loc. Sec.*

1876 FARNCOMBE, RICHARD, 40, Belgrave street, Balsall heath, Birmingham.

1869 FARQUHAR, WILLIAM, M.D., Deputy Surgeon-General, Madras Army, Ootacamund, Madras Presidency.

1861 FARR, GEO. F., L.R.C.P. Ed., Slade House, 175, Kennington road, S.E. *Council*, 1885.

1882 FARRAR, JOSEPH, M.D., Gainsborough.

1868 FEGAN, RICHARD, M.D., Westcombe park, Blackheath, S.E.

1886 FENNELL, DAVID, L.K.Q.C.P.I., 517, Commercial road East, E.

1886 FENTON, HERBERT ALFRED HILL, M.D. Brussels, 1, Cumberland street, S.W.

1886 FISHER, FREDERICK BAZLEY, L.R.C.P. Lond., West Walk Dorchester.

1870 FISHER, JOHN MOORE, M.D., 6, Pryme street, Hull.

1882 FITZGERALD, CHARLES EGERTON, M.D., West Terrace, Folkestone. *Hon. Loc. Sec.*

1884 FITZGERALD, JAMES G., F.R.C.S. Ed., Arundel Lodge, Balham, S.W.

Elected

1877* FONMARTIN, HENRY DE, M.D., The Elms, Parkhurst, Isle of Wight.

1884 FORD, ALEXANDER, L.R.C.P. Ed., 9, Parnell street, Waterford.

1877* FORD, JAMES, M.D., Eltham, Kent.

1884 FORSTER, HARRY JOHN,

1834 FORSYTH, ALEXANDER, M.D., 12, Park place, Greenwich, S.E.

1884 FOURACRE, ROBERT PERRIMAN, 20, Tollington park, N.

1886 FOWLER, CHARLES OWEN, M.D., Parchmore road, Thornton Heath, S.W.

1875* FRASER, ANGUS, M.D., Physician and Lecturer on Clinical Medicine to the Aberdeen Royal Infirmary; 232, Union street, Aberdeen.

1888 FRASER, JAMES ALEXANDER, L.R.C.P. Lond., Western Lodge, Romford.

1886 FREELAND, ERNEST HARDING, L.R.C.P. Lond., 75, Broadhurst gardens, South Hampstead, N.W.

1867 FREEMAN, HENRY W., 24, Circus, Bath.

1880 FRY, JOHN BLOUNT, Swindon, Wiltshire.

1883 FULLER, HENRY ROXBURGH, M.B. Cantab., 45, Curzon street, Mayfair, W. *Trans.* 1.

1886 FURNER, WILLOUGHBY, F.R.C.S., 2, Brunswick place, Brighton. *Hon. Loc. Sec.*

1874* GALABIN, ALFRED LEWIS, M.A., M.D., Obstetric Physician to, and Lecturer on Midwifery at, Guy's Hospital; 49, Wimpole street, Cavendish square, W. *Council*, 1876-78. *Hon. Lib.* 1879. *Hon. Sec.* 1880-3. *Vice-Pres.* 1884. *Treas.* 1885-8. *Trans.* 11.

1888 GALLOWAY, ARTHUR WILTON, L.R.C.P. Lond., 79, New North Road, N.

1863 GALTON, JOHN H., M.D., Woodside, 39, Anerley road, Upper Norwood, S.E. *Council*, 1874-6.

1881 GANDY, WILLIAM, Hill Top, Gipsy hill, S.E.

Elected

1886 GARDE, HENRY CROKER, F.R.C.S. Edin., Maryborough, Queensland.

1887 GARDINER, BRUCE H. J., L.R.C.P. Ed., Gloucester House, Barry road, East Dulwich, S.E.

1879 GARDNER, JOHN TWINAME, 6, Hillsboro' terrace, Ilfracombe.

1872 GARDNER, WILLIAM, M.A., M.D., Professor of Gynæcology, McGill University; Gynæcologist to the Montreal General Hospital; 109, Union avenue, Montreal, Canada.

1876 GARNER, JOHN, 52, New Hall street, Birmingham.

1873 GARTON, WILLIAM, M.D., F.R.C.S., Hardshaw street, St. Helen's, Lancashire.

1859 GERVIS, HENRY, M.D., F.R.C.P., Consulting Obstetric Physician to St. Thomas's Hospital, and Consulting Physician to the Royal Maternity Charity; 40, Harley street, Cavendish square. *Council*, 1864-66. *Hon. Sec.* 1867-70. *Vice-Pres.* 1871-3. *Treas.* 1878-81. *Pres.* 1883-4. *Trans.* 8.

1866 GERVIS, FREDERICK HEUDEBOURCK, 1, Fellows road, Haverstock hill, N.W. *Council*, 1877-9. *Trans.* 1.

1884 GIBB, CHARLES JOHN, M.D., Westgate House, Newcastle-on-Tyne.

1875 GIBBINGS, ALFRED THOMAS, M.D., 93, Richmond road, Dalston, N.E. *Council*, 1885-6, 1888.

1884 GIBBON, FREDERICK WILLIAM, 87, Hudson street, South Shields.

1883 GIBBONS, ROBERT ALEXANDER, M.D., Physician to the Grosvenor Hospital for Women and Children; 32, Cadogan place, S.W. *Trans.* 1.

1874 GIBSON, JAMES EDWARD, Hillside, West Cowes, Isle of Wight.

1877 GIFFARD, DOUGLAS WILLIAM, 5, Pavilion Parade, Old Steyne, Brighton.

1869 GILL, WILLIAM, L.R.C.P. Lond., 11, Russell square, W.C.

1871 GODDARD, EUGENE, L.R.C.P. Lond., North Lynne, Highbury New Park, N. *Trans.* 1.

1876 GODFRAY, ALFRED CHARLES, M.B., St. Helier House, Jersey.

Elected

1871 GODSON, CLEMENT, M.D., C.M., Assistant Physician-Accoucheur to St. Bartholomew's Hospital; 9, Grosvenor street, W. *Council*, 1876-77. *Hon. Sec.* 1878-81. *Vice-Pres.* 1882-4. *Board Exam. Midwives*, 1877, 1882-86. *Trans.* 5.

1868 GODWIN, ASHTON, M.D., 28, Brompton crescent, Brompton, S.W.

1873 GOLDSMITH, JOHN, M.D., Highworth House, Worthing Sussex.

1873 GOODCHILD, NATHANIEL, L.R.C.P. Ed., Sidney House, Highgate road, N.W.

1883 GORDON, JOHN, M.D., 10, Amersham road, New Cross, S.E.

1869 GOSS, TREGENNA BIDDULPH, 1, The Circus, Bath. *Hon. Loc. Sec.*

1884 GOWANS, WILLIAM, F.R.C.S. Ed., 1, Victoria terrace, South Shields.

1885 GRANT, OGILVIE, M.D., Queen Mary's House, Inverness.

1875 GRAY, JAMES, M.D., 15, Newton terrace, Glasgow.

1884 GREENE, WALTER, L.R.C.P. Lond., Wallingford.

1887 GREENWOOD, EDWIN CLIMSON, L.R.C.P., 19, St. John's wood park, N.W.

1863 GRIFFITH, G. DE GORREQUER, 34, St. George's square, S.W. *Trans.* 2.

1869 GRIFFITH, JOHN T., M.D., Talfourd House, Camberwell, S.E. *Council*, 1884-6.

1879* GRIFFITH, WALTER SPENCER ANDERSON, M.B. Cantab., F.R.C.S., M.R.C.P., Obstetric Physician to the Great Northern Central Hospital; Tutor in Obstetrics and Gynæcology at St. Bartholomew's Hospital; 114, Harley street, W. *Council*, 1886-8. *Board Exam. Midwives*, 1887-88. *Trans.* 3.

1870 GRIGG, WILLIAM CHAPMAN, M.D., Physician to the In-patients, Queen Charlotte's Lying-in Hospital; Assistant Obstetric Physician to the Westminster Hospital; 27, Curzon street, Mayfair. *Council*, 1875-77. *Board Exam. Midwives*, 1878-79.

Elected

O.F. GRIMSDALE, THOS. F., L.R.C.P. Ed., Consulting Surgeon to the Lying-in Hospital; 29, Rodney street, Liverpool. *Council*, 1861-62. *Vice-Pres.* 1875-76.

1882 GRIPPER, WALTER, M.B. Cantab., Featherstone villa, Wallington, Surrey.

1880 GROGONO, WALTER ATKINS, Berwick House, Broadway, Stratford, E.

1879 GROVE, WILLIAM RICHARD, M.D., St. Ives, Huntingdonshire.

1887 GROWSE, WILLIAM, L.R.C.P. Lond., The Red House, Brentwood.

1885 GRÜN, EDWARD FERDINAND, 2, Lower Richmond road, Putney, S.W.

1886 GUILDING, LANSDOWN MURRAY, M.A., M.B. Oxon., 30, Forbury, Reading.

1887 HACKNEY, JOHN, M.D. St. And., Hythe.

1867 HADAWAY, JAMES, L.R.C.P. Ed., Dent-de-Lion Villa, Garlinge, near Margate.

1876 HADDEN, JOHN, M.D., 31, West street, Horncastle, Lincolnshire.

1881 HAIR, JAMES, M.D., Westgate, Peterborough.

1859 HALL, FREDERICK, 1, Jermyn street, St. James's, S.W.

1871 HALLOWES, FREDERICK B., Redhill, Reigate, Surrey. *Council*, 1885-6, 1888.

1880 HAMES, GEORGE HENRY, F.R.C.S., 2, Queensborough terrace, W.

1887 HAMILTON, JOHN, F.R.C.S. Ed., Swadlincote, Burton-on-Trent.

1880 HAMILTON, THOMAS, M.D., Melrose House, 129, Green lanes, Stoke Newington, N.

1883 HANDFIELD-JONES, MONTAGU, M.D. Lond., M.R.C.P., Lecturer on Midwifery at, and Physician Accoucheur in charge of Out-patients to, St. Mary's Hospital; 24, Montagu square, W. *Council*, 1887-88.

1860 HARDEY, KEY, Surgeon to the West City Dispensary; 4, Wardrobe place, Doctors' Commons, E.C.

Elected

1886 HARDY, HENRY L. P., Holly Lodge, Richmond road, Kingston-on-Thames.

1877 HARPER, GERALD S., 5, Hertford street, May Fair, W.

1878 HARRIES, THOMAS DAVIES, F.R.C.S., Grosvenor House, Aberystwith, Cardiganshire.

O.F. HARRINSON, ISAAC, F.R.C.S., Castle street, Reading, Berks. *Council*, 1862-65. *Hon. Loc. Sec.*

1867 HARRIS, WILLIAM H., M.D., 78, Oxford gardens, W.

1861 HARRIS, WILLIAM JOHN, Church House, Heene, Worthing. *Hon. Loc. Sec.*

1880 HARRISON, RICHARD CHARLTON, 13, Sandringham gardens, Ealing, W.

1887 HASTINGS, CHARLES J. C. O., M.D., 189, Parliament street, Toronto.

1886 HARTLEY, HORACE, L.R.C.P. and S. Ed., Stone, Staffordshire.

1886 HARTLEY, REGINALD, L.R.C.P. and S. Ed., Kirkgate House, Thirsk.

1880 HARVEY, JOHN STEPHENSON, 69, Rue Faidherbe, Boulogne-sur-Mer, France.

1865 HARVEY, ROBERT, M.D., 52, Chowringhee, Calcutta. [Per Messrs. Cochran and Macpherson, 152, Union street, Aberdeen.] *Trans.* 1. *Hon. Loc. Sec.*

1886 HARVEY, SIDNEY FRED., L.R.C.P. Lond., 42, Perham road, West Kensington, W.

1865 HAYES, HAWKESLEY ROCHE, Basingstoke, Hants.

1873 HAYES, THOMAS CRAWFORD, M.D., Assistant Obstetric Physician to King's College Hospital; 17, Clarges street, Piccadilly, W. *Council*, 1876-78.

1880 HEATH, WILLIAM LENTON, M.B., 88A, Cromwell road, Queen's gate, S.W. *Trans.* 1.

1867 HEMBROUGH, JOHN WILLIAM, Ivy Cottage, Waltham, Grimsby.

1881 HEPBURN, WILLIAM ALEX., Rosslyn House, Coxhoe, Co. Durham.

Elected

1876 HERMAN, GEORGE ERNEST, M.B., F.R.C.P., Obstetric Physician to, and Lecturer on Midwifery at, the London Hospital; 20, Harley street, Cavendish square, W. *Council*, 1878-79. *Hon. Lib.* 1880-1. *Hon. Sec.* 1882-5. *Vice-Pres.* 1886-7. *Board Exam. Midwives*, 1886-88. *Trans.* 14.

1887 HEWITT, FREDERIC WILLIAM, M.D. Cantab., 10, George street, Hanover square, W.

O.F. HEWITT, GRAILY, M.D., F.R.C.P., Consulting Obstetric Physician to University College Hospital; 36, Berkeley square, W. *Hon. Sec.* 1859-64. *Treas.* 1865-66. *Vice-Pres.* 1867-68. *Pres.* 1869-70. *Trans.* 21.

1860 HICKS, JOHN BRAXTON, M.D., F.R.C.P., F.R.S., Physician Accoucheur to, and Lecturer on Midwifery and Diseases of Women at, St. Mary's Hospital; 24, George street, Hanover square. *Council*, 1861-2, 1869. *Hon. Sec.* 1863-65. *Vice-Pres.* 1866-68. *Treas.* 1870. *Pres.* 1871-2. *Trans.* 36.

1860 HIGGS, THOMAS FREDERIC, M.D., Beaconsfield House, Dudley, Worcestershire.

1886 HOAR, CHARLES, M.B., C.M. Aber., Bantony House, Hurst Green, Hawkhurst (Railway Station Robertsbridge).

1886 HODGES, HERBERT CHAMNEY, L.R.C.P. Lond., Watton, Herts.

O.F. HODGES, RICHARD, M.D., F.R.C.S., 36, Harewood Square, N.W. *Trans.* 3.

1887 HODSON, HENRY ALGERNON, L.R.C.P. Ed. & L.M., 23, Brunswick square, Brighton.

1886 HOLBERTON, HENRY NELSON, L.R.C.P. Lond., East Molesey.

1875 HOLLINGS, EDWIN, M.D., 4, Gordon street, Gordon square, W.C. *Council*, 1888.

1886 HOLLOWAY, WILLIAM GEORGE, B.A., M.B. Cantab., Apsley Villa, St. John's, S.E.

1859 HOLMAN, CONSTANTINE, M.D., The Barons, Reigate, Surrey. *Council*, 1867-69. *Vice-Pres.* 1870-71.

Elected

1880 HONIBALL, OSCAR DUNSCOMBE, M.D., George Town, Demerara, British Guiana.

1864 HOOD, WHARTON PETER, M.D., 11, Seymour street, Portman square, W.

1872 HOPE, WILLIAM, M.D., Physician to Queen Charlotte's Lying-in Hospital; 56, Curzon street, Mayfair, W. *Council*, 1877-9. *Board Exam. Midwives*, 1873-4.

1884 HOPKINS, JOHN, L.R.C.P. Ed., 93, Camberwell road, S.E.

1883* HORROCKS, PETER, M.D., M.R.C.P. Lond., Assistant Obstetric Physician to, and Demonstrator of Practical Obstetrics at, Guy's Hospital; 9, St. Thomas's street, S.E. *Council*, 1886-7. *Hon. Lib.* 1888. *Trans.* 1.

1876 HORSMAN, GODFREY CHARLES, 22, King street, Portman square, W.

1883 HOSKIN, THEOPHILUS, L.R.C.P. Lond., 186, Amhurst road, N.E.

1883 HOUCHIN, EDMUND KING, L.R.C.P. Ed., 23, High street, Stepney, E.

1884 HOUGH, CHARLES HENRY, Full street, Derby.

1877 HOWELL, HORACE SYDNEY, M.D., East Grove House, 18, Boundary road, St. John's Wood, N.W.

1879 HUBBARD, THOMAS WELLS, Lenham, Bromley, Kent.

1885 HUGHES, EDGAR A., L.R.C.P. Lond., 91, Onslow gardens, S.W.

1882 HUNT, JOSEPH WILLIAM, M.D. B.S., 101, Queen's road, Dalston, E.

1883 HURFORD, CHARLES, L.R.C.S.I., Epping, Essex.

1884* HURRY, JAMIESON BOYD, M.D. Cantab., 43, Castle street, Reading. *Council*, 1887-8. *Trans.* 1.

1878 HUSBAND, WALTER EDWARD, 56, Bury New Road, Manchester.

1886 HUTTON, JOHN STUART, L.R.C.P. Lond., St. Thomas's Hospital, S.E.

1882 HUTTON, ROBERT JAMES, L.R.C.P. Ed., Stapleton House, Stapleton Hall road, Finsbury Park, N.

Elected

1884 INGLE, ROBERT NICHOLS, M.D., University Lecturer on Midwifery, 21, Regent street, Cambridge. *Council*, 1887. *Hon. Loc. Sec.*

1884 INGLIS, JAMES, King street, Newcastle, New South Wales.

1883 INMAN, ROBERT EDWARD, 243, Hackney road, E.

1884 IRWIN, JOHN ARTHUR, M.A., M.D., 427, Fifth avenue, New York.

1864 JACKSON, EDWARD, M.B., 69, Osborne Road, Jesmond, Newcastle-on-Tyne. *Hon. Loc. Sec.*

1887 JACKSON, G. E. CORRIE, F.R.C.S. Ed., 17, Poland street, W.

1883 JACKSON, GEORGE HENRY, Lansdowne House, Tottenham.

1884 JACKSON, JAMES, 15, Huntingdon street, Barnsbury, N.

1864 JACKSON, ROBERT, M.D., 53, Notting hill square, W. *Council*, 1885.

1886 JACOMB-HOOD, CHARLES JOHN, L.R.C.P., King's College Hospital, W.C.

1873 JAKINS, WILLIAM VOSPER, L.R.C.P. Ed., 165, Collins street East, Melbourne.

1872 JALLAND, ROBERT, Horncastle, Lincolnshire. *Trans.* 1.

1878 JAMES, WALTER CULVER, M.D., M.C., 11, Marloes road, Kensington, W.

1877 JAMIESON, PATRICK, M.A., 3, St. Peter's street, Peterhead, Aberdeenshire.

1885 JAMIESON, ROBERT ALEXANDER, M.D., Shanghai. [Per Messrs. Henry S. King and Co., 65, Cornhill, E.C.]

1886 JAMISON, ARTHUR ANDREW, M.D. Glas., St. Helen's, Lancashire.

1883* JENKINS, EDWARD JOHNSTONE, M.B. Oxon., Australian Club, Sydney. [Per H. K. Lewis, 136, Gower street, W. C.]

1877 JENKS, EDWARD W., M.D., 84, Lafayette avenue, Detroit, Michigan, U.S.

1882 JENNINGS, CHARLES EGERTON, F.R.C.S. Eng., Assistant Surgeon to the North-West London Hospital; 15, Upper Brook street, Grosvenor square, W.

Elected

1883 JOHNSON, ARTHUR JUKES, M.B., 52, Bloor street west, Toronto, Ontario, Canada.

1877 JOHNSON, SAMUEL, M.D., 5, Hill street, Stoke-upon-Trent.

1881 JOHNSTON, JOSEPH, M.D., 24, St. John's Wood Park, N.W.

1879 JOHNSTON, WM. BEECH, M.D., 157, Jamaica road, Bermondsey, S.E.

1868 JONES, EVAN, Ty-Mawr, Aberdare, Glamorganshire. *Council*, 1886-8. *Hon. Loc. Sec.*

1878 JONES, H. MACNAUGHTON, M.D., F.R.C.S.I. and Edin., 141, Harley street, Cavendish square, W.

1881 JONES, JAMES ROBERT, M.B., Box, 320, Winnipeg, Manitoba, Canada.

1868 JONES, JOHN, 60, King street, Regent street, W.

1887 JONES, J. TALFOURD, M.B. Lond., Rose Bank, South terrace Eastbourne.

1876 JONES, LESLIE, M.D., C.M., Limefield House, Cheetham Hill, Manchester.

1886 JONES, LEWIS, M.D., Balham, S.W.

1885 JONES, P. SYDNEY, M.D., 16, College street, Hyde Park, Sydney. [Per Messrs. D. Jones and Co., 1, Gresham Buildings, Basinghall street, E.C.]

1873 JONES, PHILIP W., Silver street, Enfield.

1883 JONES, W. H. FENTON, M.D., 29, Brook street, Grosvenor square, W.

1886 JONES, WILLIAM OWEN, The Downs, Bowden, Manchester.

1879 JOUBERT, CHARLES HENRY, M.D. [Care of Comptoir d'Escompte de Paris, Calcutta.]

1878 JUDSON, THOMAS ROBERT, L.R.C.P. Lond., Hayman's Green, West Derby, Liverpool.

1875 JUKES, AUGUSTUS, M.B., N. W. Mounted Police, Regina, N. W. Territory, Canada.

1878 KANE, NATHANIEL H. K., M.D., Lanherne, Kingston hill, Surrey.

1884 KEATES, WILLIAM COOPER, L.R.C.P., 2, Tredegar villas, East Dulwich road, S.E.

Elected

1880 KEBBELL, ALFRED, Flaxton, York.

O.F. KEELE, GEORGE THOMAS, 81, St. Paul's road, Highbury, N. *Council*, 1885.

1883 KEELING, JAMES HURD, M.D., 267, Glossop road, Sheffield. *Hon. Loc. Sec.*

1874 KEMPSTER, WILLIAM HENRY, L.R.C.P. Ed., Oak House, Bridge road, Battersea, S.W.

1886 KENNEDY, ALFRED EDMUND, L.R.C.P. Ed., Chesterton House, Plaistow, E.

1879 KER, HUGH RICHARD, L.R.C.P. Ed., Townsend House, Hales-Owen.

1865* KERNOT, GEORGE CHARLES, 9, Elphinstone road, Hastings.

1883 KERR, J. KING, M.D., Leytonstone, E.

1872 KERR, NORMAN S., M.D., F.L.S., 42, Grove road, Regent's park, N.W.

1877* KERSWILL, JOHN BEDFORD, M.R.C.P. Ed., Fairfield, St. German's, Cornwall.

1878 KHORY, RUSTONJEE NASERWANJEE, M.D. Brussels, L.Med. Bombay, Physician to the Parell Dispensary, Bombay; Girgaum road, Bombay.

O.F. KIALLMARK, HENRY WALTER, 5, Pembridge gardens, Bayswater. *Council*, 1879-80.

1860 KINGSFORD, EDWARD, F.R.C.S., Surgeon to the Sunbury Dispensary; Sunbury-on-Thames.

1862 KIRKPATRICK, JOHN RUTHERFORD, M.D. Dub., King's Professor of Midwifery, Dublin University; 4, Upper Merrion street, Dublin. *Council*, 1872-4.

1872* KISCH, ALBERT, 3, Sutherland gardens, Maida vale, W.

1867 KNAGGS, HENRY GUARD, M.D., 189, Camden road, N.W.

1876 KNOTT, CHARLES, M.R.C.P. Ed., Liz Ville, Elm grove, Southsea.

1881 LACY, CHARLES SETHWARD DE LACY, M.B., 31, Grosvenor street, W.

1867 LANGFORD, CHARLES P., Sunnyside, Hornsey lane, N.

Elected

1887 LANGHORNE, THOMAS GRANT, Albany, W. Australia.

1883 LANGLEY, AARON, L.R.C.P. Ed., 149, Walworth road, S.E.

1886 LANKESTER, HERBERT HENRY, M.D. Lond., 1, Elm park gardens, South Kensington, W.

1872 LATTEY, JAMES, 23, St. Mary Abbott's terrace, Kensington, W.

1886 LAUDER, WILLIAM, M.D. Edin., 174, Oxford road, Manchester.

1887 LAW, WILLIAM THOMAS, M.D. Edin., 9, Norfolk crescent, W.

1875 LAWRENCE, ALFRED EDWARD AUST, M.D., Physician-Accoucheur to the Bristol General Hospital; 15, Richmond hill, Clifton, Bristol. *Council*, 1885-86, 1888. *Hon. Loc. Sec.*

1878 LEACHMAN, ALBERT WARREN, M.D., Fairley, Petersfield, Hants.

1884* LEDIARD, HENRY AMBROSE, M.D., 43, Lowther street, Carlisle. *Trans.* 1.

1887 LEES, EDWIN LEONARD, M.B., C.M. Ed., 2, The Avenue, Redland road, Bristol.

1860 LEISHMAN, WILLIAM, M.D., Physician to the University Lying-in Hospital, Regius Professor of Midwifery in the University of Glasgow; 11, Woodside crescent, Glasgow. *Council*, 1866-68. *Vice-Pres.* 1869-70. *Trans.* 1.

1881 LE PAGE, JOHN FISHER, M.D., 17, The Crescent, Salford, Manchester.

1885 LEWERS, ARTHUR H. N., M.D. Lond., M.R.C.P., Assistant Obstetric Physician to the London Hospital; 60, Wimpole street, W. *Council*, 1887-88. *Trans.* 2.

1877 LEWIS, JOHN RIGGS MILLER, M.D., Deputy-Surgeon General, Markham Lodge, Liverpool road, Kingston hill, Surrey.

1885 LIDIARD, SYDNEY ROBERT, L.R.C.P. Ed., 11, Charlotte street, Hull.

1875 LIEBMAN, CARLO, M.D. Vienna, Principal Surgeon, Trieste Civil Hospital, Trieste, Austria. *Trans.* 1.

1874 LITHGOW, ROBERT ALEXANDER DOUGLAS, M.R.C.P. Ed., 27A, Lowndes street, Belgrave square, S.W.

Elected

1868 LLEWELLYN, EVAN, L.R.C.P. Ed., 9, Mount place, London Hospital, E.

1872* LOCK, JOHN GRIFFITH, M.A., 2, Rock Terrace, Tenby.

1859 LOMBE, THOMAS ROBERT, M.D., Bemerton, Torquay.

1862 LOWE, GEORGE, F.R.C.S., 5, Horninglow street, Burton-on-Trent, Staffordshire. *Council*, 1887-88. *Trans.* 2. *Hon. Loc. Sec.*

1873 LUSH, WILLIAM JOHN HENRY, F.R.C.P.Ed., Associate of King's College, London; Fyfield House, Andover.

1878* LYCETT, JOHN ALLAN, M.D., The "Hollies," Graiseley, Wolverhampton.

1871 MCCALLUM, DUNCAN CAMPBELL, M.D., Professor of Midwifery and Diseases of Women and Children, McGill University; 45, Union avenue, Montreal, Canada. *Trans.* 4.

1884 MCCARTHY, GEORGE FRANCIS, L.K.Q.C.P., 138, Westminster Bridge road, S.E.

1879 MACKEOUGH, GEORGE J., M.D., Chatham, Ontario, Canada.

O.F. MACKINDER, DRAPER, M.D., Consulting Surgeon to the Gainsborough Dispensary; Gainsborough, Lincolnshire. *Council*, 1871-3. *Trans.* 2.

1879 MACLAURIN, HENRY NORMAND, M.D., 155, Macquarie street, Sydney, New South Wales.

1886 MCMULLEN, WILLIAM, L.K.Q.C.P.I., 319A, Brixton road, S.W.

1859 MADGE, HENRY M., M.D., 4, Upper Wimpole street, W. *Council*, 1863-65, 1884. *Vice-Pres.* 1872-4. *Trans.* 15.

1884 MALCOLM, JOHN D., M.B., C.M., 24, Bryanston street, W.

1871 MALINS, EDWARD, M.D., Obstetric Physician to the General Hospital, Birmingham; 8, Old square, Birmingham. *Council*, 1881-3. *Vice-Pres.* 1884-6. *Hon. Loc. Sec.*

1876 MANBY, FREDERICK EDWARD, 10, King street, Wolverhampton.

Elected

1868 MARCH, HENRY COLLEY, M.D., 2, West street, Rochdale.

1887 MARK, LEONARD P., L.R.C.P. Lond., 18, Earl's Court gardens, W.

1860 MARLEY, HENRY FREDERICK, The Nook, Padstow, Cornwall.

1862 MARRIOTT, ROBERT BUCHANAN, Swaffham, Norfolk.

1887 MARSH, O. E. BULWER, L.R.C.P. Ed., Ventnor House, Newport, Monmouthshire.

1873 MARTIN, HENRY CHARRINGTON, M.B., C.M., 11, Somers place, Hyde park, W.

1887 MASON, ARTHUR HENRY, L.R.C.P. Lond., High street, Walton-on-Thames.

1877 MASON, SAMUEL BUTLER, L.R.C.P. Ed., Denham House, Pontypool, Monmouthshire.

1884 MASSEY, HUGH HOLLAND, 2, North terrace, Camberwell, S.E.

1884 MASTERS, JOHN ALFRED, L.R.C.P. Lond., Westall House, Brook green, W.

1886 MATTHEY, ARTHUR, L.R.C.P. Ed., The General Hospital, Croydon.

1887 MAUGHAN, JAMES, L.R.C.P. Lond., 56, Albany street, Regent's park, N.W.

1877 MAUNSELL, H. WIDENHAM, A.M., M.D., Pitt and London street, Dunedin, New Zealand.

1883 MAURICE, OLIVER CALLEY, 75, London street, Reading. *Council*, 1888.

1877 MAY, LEWIS JAMES, Bountis Thorne, Seven Sisters road, Finsbury Park, N.

1884 MAYNARD, EDWARD CHARLES, L.R.C.P. Ed., 32, Sandgate road, Folkestone.

1885 MELLER, CHARLES BOOTH, L.R.C.P. Ed., Cowbridge, Glamorganshire.

1886 MENNELL, ZEBULON, 31, Shepherd's Bush road, W.

1882 MEREDITH, WILLIAM APPLETON, M.B., C.M., Surgeon to the Samaritan Free Hospital for Women and Children; 6, Queen Anne street, Cavendish square, W. *Council*. 1886-8. *Trans.* 1.

Elected

1883 MIDDLEMIST, ROBERT PERCY, L.R.C.P. Lond., 6, Devonport street, Hyde park, W.

1875* MILES, ABIJAH J., M.D., Professor of Diseases of Women and Children in the Cincinnati College of Medicine, Cincinnati, Ohio, U.S.

1876 MILLMAN, THOMAS, M.D., Asylum for the Insane, Kingston, Ontario, Canada.

1880 MILLS, ROBERT JAMES, M.B., M.C., All Saints' Green, Norwich.

1886 MILNER, SAMUEL GEORGE, L.R.C.P. Ed., Hillside, Dulwich road, Norwood, S.E.

1876 MILSON, RICHARD HENRY, M.D., 88, Finchley road, South Hampstead, N.W.

1869 MINNS, PEMBROKE R. J. B., M.D., Thetford, Norfolk.

1867 MITCHELL, ROBERT NATHAL, M.D., Chester House, Wickham road, Brockley, S.E.

1884 MITRA, ASUTOSH, L.R.C.P. Ed., Kashmir, *vid* Sealkote, India.

1868 MOOTHOOSAWMY, P. S., M.D., F.L.S., Tanjore, Madras Presidency. *Trans.* 1.

1877 MOON, FREDERICK, M.B., Bexley house, Greenwich.

1873 MOON, ROBERT HENRY, F.R.C.S., Fern Lodge, West Norwood, S.E.

1859 MOORHEAD, JOHN, M.D., Surgeon to the Weymouth Infirmary and Dispensary; Weymouth, Dorset.

1888 MORGAN, GEORGE JOHN, L.K.Q.C.P. & L.M., Dovaston House, Kinnerley, West Felton.

1888 MORISON, ALEXANDER, M.D. Ed., Dunnottar, 115, Green lanes, Stoke Newington, N.

1883 MORRIS, CLARKE KELLY, Gordon Lodge, Charlton road, Blackheath, S.E.

1886 MORTON, SHADFORTH, M.D. Durham, Wellesley Villas, Croydon.

1887 MOSELEY, GEORGE WILKINS, M.B., C.M. Ed., Royal Hospital for Children and Women, Waterloo road, S.E.

Elected

1879 MOULLIN, JAMES A. MANSELL, M.A., M.B., Assistant Physician to the Hospital for Women and Children, 69, Wimpole street, Cavendish square, W. *Trans.* 1.

1878 MOWAT, GEORGE, 49, St. Peter street, St. Albans. *Trans.* 1.

1877 MURPHY, JAMES, M.D., Honorary Surgeon to the General Infirmary, Sunderland; Holly House, Sunderland. *Hon. Loc. Sec. Trans.* 1.

1885 MURRAY, CHARLES STORMONT, L.R.C.S. and L.M. Ed., 34, Gloucester place, Portman square, W.

1887 MURRAY, HORACE H. C., 470, Hornsey road, N.

O.F. MUSGRAVE, JOHNSON THOMAS, L.R.C.P. Ed., Irlam villa, 39, Finchley road, N.W. *Council*, 1859-60. *Trans.* 1.

1888 MYDDELTON-GAVEY, EDWARD HERBERT, 64, St. Matthew's street, Ipswich.

1887 NAPIER, A. D. LEITH, M.D. Aber., 3, Beaufort gardens, S.W.

1863 NASON, JOHN JAMES, M.B. Lond., 11, Bridge street, Stratford-on-Avon.

1859 NEAL, JAMES, M.D., Barcelona House, Sandown, Isle of Wight.

1882 NESHAM, THOMAS CARGILL, M.D., Lecturer on Midwifery in the University of Durham College of Medicine at Newcastle-on-Tyne; 12, Ellison place, Newcastle-on-Tyne.

1881 NETHERCLIFT, WILLIAM HENRY, Junior Athenæum Club, Piccadilly, W.

1859 NEWMAN, WILLIAM, M.D., Surgeon to the Stamford and Rutland Infirmary; Barn Hill House, Stamford, Lincolnshire. *Council*, 1873-75. *Vice-Pres.* 1876-77. *Trans.* 4.

1873 NICHOLSON, ARTHUR, M.B. Lond., 98, Montpellier road, Brighton.

1879 NICHOLSON, EMILIUS ROWLEY, M.D., 89, Camden road, N.W.

1876 NIX, EDWARD JAMES, M.D., 143, Great Portland street, W.

1882 NORMAN, JOHN EDWARD, Lismore House, Hebburn-on-Tyne.

Elected

1883 NUNN, PHILIP W. G., L.R.C.P. Lond., Christchurch road, Bournemouth.

1884 OAKES, ARTHUR, M.D., 99, Priory road, West Hampstead, N.W.

1880 OAKLEY, JOHN, Holly House, Wood's End, Halifax, Yorkshire.

1886 OGLE, ARTHUR WESLEY, L.R.C.P. Lond.,

1876 OGSTON, FRANCIS, M.D., Lecturer on Hygiene and Medical Jurisprudence in the University of Otago; Dunedin, New Zealand.

O.F. OLDHAM, HENRY, M.D., F.R.C.P., Consulting Obstetric Physician to Guy's Hospital; 4, Cavendish place, Cavendish square, W. *Vice-Pres.* 1859. *Council*, 1860, 1865-66. *Treas.* 1861-62. *Pres.* 1863-64. *Trans.* 1. *Trustee.*

1888 OLIVER, FRANKLIN HEWITT, L.R.C.P. Lond., 2, Kingsland road, E.

1884 OPENSHAW, THOMAS HORROCKS, M.B., M.S., London Hospital, E.

1869 ORD, GEORGE RICE, Streatham hill, Surrey. *Council*, 1881.

1880 ORTON, CHARLES, M.D., Nelson place, Newcastle-under-Lyme, Staffordshire.

1877 OSTERLOH, PAUL RUDOLPH, M.D. Leipzic; Dresden.

1863 OSWALD, JAMES WADDELL JEFFRIES, M.D., 245, Kennington road, S.E. *Trans.* 4.

1884 OSWALD, ROBERT JAMES WILLIAM, L.R.C.P., 212, Clapham road, S.W.

1883 PALMER, JOHN IRWIN, Warwick lodge, Kingston-on-Thames.

1877 PALMER, MONTAGU H. C., The Manor House, Newbury.

1886 PAPILLON, THOMAS ALEXANDER, L.R.C.P. Ed., Burley road, Oakham.

1877* PARAMORE, RICHARD, M.D., 18, Hunter street, Brunswick square, W.C.

1867 PARKS, JOHN, Bank House, Manchester road, Bury, Lancashire.

Elected

1887 PARSONS, JOHN INGLIS, M.D. Durh., 9, Collingham place, S.W.

1880 PARSONS, SIDNEY, 78, Kensington park road, W.

1865* PATERSON, JAMES, M.D., Hayburn Bank, Partick, Glasgow.

1874 PAYNE, WILLIAM S. HELE, 54, Queen's Road, Peckham, S.E.

1882* PEACEY, WILLIAM, M.B., 214, Lewisham high road, S.E.

1864 PEARSON, DAVID RITCHIE, M.D., 23, Upper Phillimore place, Kensington, W.

1871 PEDLER, GEORGE HENRY, 6, Trevor terrace, Rutland gate, S.W.

1880 PEDLEY, THOMAS FRANKLIN, M.D., Rangoon, India. *Trans.* 1.

1881 PENNY, GEORGE TOWN, B.A., Stanley House, Oakfield road, Upper Tollington Park, N.

1881 PERIGAL, ARTHUR, M.D., New Barnet, Herts.

1871 PERRIGO, JAMES, M.D., 163, Bleury street, Montreal, Canada. *Hon. Loc. Sec.*

1879* PESIKAKA, HORMASJI DOSABHAI, 23, Hornby row, Bombay.

1883 PETTIFER, EDMUND HENRY, 29, Stoke Newington green, N.

1879 PHIBBS, ROBERT FEATHERSTONE, L.R.C.P. Ed., Pelham House, 30, Sutherland avenue, W.

1879 PHILLIPS, GEORGE RICHARD TURNER, 24, Leinster square, Bayswater, W.

1882 PHILLIPS, JOHN, B.A., M.B., M.R.C.P., Physician to the British Lying-in Hospital; 125, Harley street, W. *Council*, 1887-88. *Trans.* 3.

1878 PHILPOT, JOSEPH HENRY, M.D., 13, South Eaton place, S.W.

1871 PHILPS, PHILIP GEORGE, 4, Queen's road, Peckham, S.E.

1876 PICARD, P. KIRKPATRICK, M.D., 59, Abbey road, St. John's Wood, N.W.

1874 PIGG, THOMAS, M.D., M.R.C.P., Physician to the Manchester Southern Hospital for Women and Children; 98, Mosley street, Manchester.

Elected

1864 PLAYFAIR, W. S., M.D., LL.D., F.R.C.P., Physician Accoucheur to H.I. & R.H. the Duchess of Edinburgh; Professor of Obstetric Medicine in King's College, and Obstetric Physician to King's College Hospital; 31, George street, Hanover Square, W. *Council*, 1867. 1883-5. *Hon. Librarian*, 1868-9. *Hon. Sec.* 1870-72. *Vice-Pres.* 1873-5. *Pres.* 1879-80. *Trans.* 14.

1880 POCOCK, FREDERICK ERNEST, M.D., The Limes, St. Mark's road, Notting hill, W.

1883 POCOCK, WALTER, Broadlands, Effra road, Brixton, S.W.

O.F.* POLLARD, WILLIAM, Surgeon to the Torbay Hospital; Southlands, Torquay, Devon.

1883 POOK, WILLIAM JOHN, L.R.C.P., 2, Hemingford road, N.

1877 POOLE, S. WORDSWORTH, M.D., Dunedin, Sidcup, Kent. *Trans.* 1.

1876 POPE, H. CAMPBELL, M.D., F.R.C.S., Broomsgrove Villa, 280, Goldhawk road, Shepherd's Bush, W.

1882 PORTER, JOSEPH FRANCIS, M.D., Helmsley, Yorkshire.

1864 POTTER, JOHN BAPTISTE, M.D., F.R.C.P., Obstetric Physician to, and Lecturer on Midwifery and Diseases of Women at, the Westminster Hospital; 20, George street, Hanover square, W. *Council*, 1872-6. *Hon. Lib.* 1877-8. *Vice-Pres.* 1879-81. *Treas.* 1882-4. *Board Exam. Midwives*, 1883-4. *Pres.* 1885-6. *Trans.* 1.

1875 POWDRELL, JOHN, 160, Euston road, N.W.

1884 POWELL, JOHN JAMES, L.R.C.P. Lond., Blyton House, Weybridge.

1863 POWELL, JOSIAH T., M.D., 347, City road, E.C.

1885 PRAEGER, EMIL ARNOLD, Nanaimo, British Columbia.

1886 PRANGLEY, HENRY JOHN, L.R.C.P. Lond., 160, Anerley road, Anerley.

1864 PRICE, WILLIAM NICHOLSON, Lecturer on Midwifery and the Diseases of Women and Children at the Leeds School of Medicine; Mount Pleasant, Leeds. *Council*, 1876-8.

Elected

1880 PRICKETT, MARMADUKE, M.A. Cantab., M.D., Physician to the Samaritan Hospital; 12, Devonport street, Gloucester square, W.

O.F. PRIESTLEY, WILLIAM O., M.D., LL.D., F.R.C.P., Consulting Obstetric Physician to King's College Hospital; 17, Hertford street, Mayfair, W. *Council*, 1859-61, 1865-66. *Vice-Pres.* 1867-69. *Pres.* 1875-76. *Trans.* 6.

1884 PRONGER, CHARLES ERNEST, L.R.C.P., Litchdon, Barnstaple.

1876 QUIRKE, JOSEPH, L.R.C.P. Ed., The Oaklands, Hunter's lane, Handsworth, Birmingham.

O.F. RANDALL, JOHN, M.D., Lecturer on Medical Jurisprudence, St. Mary's Hospital Medical School; Medical Officer, St. Marylebone Infirmary; 204, Adelaide road, N.W. *Council*, 1877.

1861 RASCH, ADOLPHUS A. F., M.D., Physician for Diseases of Women to the German Hospital; 7, South street, Finsbury square, E.C. *Council*, 1871-3. *Trans.* 5.

1878 RAWLINGS, JOHN ADAMS, M.R.C.P. Ed., 4, Northampton terrace, Swansea.

1870 RAY, EDWARD REYNOLDS, Dulwich, Surrey, S.E.

1860* RAYNER, JOHN, M.D., Swaledale House, Quadrant road north, Highbury New Park, N.

1879 READ, THOMAS LAURENCE, 11, Petersham terrace, Queen's gate, S.W.

1874 REES, WILLIAM, Priory House, 129, Queen's crescent, Haverstock hill, N.W.

1879 REID, WILLIAM LOUDON, M.D., 7, Royal crescent, Glasgow.

1886 RENSHAW, HERBERT SMITH, M.D. St. And., Salebridge house, Sale, Manchester.

1875* REY, EUGENIO, M.D., 39, Via Cavour, Turin.

1886 RICH, ARTHUR CRESSWELL, M.D. Lond., 67, Catherine street, Liverpool.

1862 RICHARDS, DAVID, Llangeitho, Cardiganshire. *Trans.* 1.

1886 RICHARDSON, THOMAS ARTHUR, 26, London road, Croydon.

Elected

1872 RICHARDSON, WILLIAM L., M.D., A.M., Professor of Obstetrics in Harvard University; Physician to the Boston Lying-In Hospital; 225, Commonwealth avenue, Boston, Massachusetts, U.S.

1872 RIGDEN, GEORGE, Surgeon to the Canterbury Dispensary; 60, Burgate street, Canterbury. *Trans.* 1. *Hon. Loc. Sec.*

1871 RIGDEN, WALTER, 16, Thurloe place, S.W. *Council*, 1882-3. *Trans.* 1.

O.F.* ROBERTS, DAVID LLOYD, M.D., F.R.C.P., F.R.S. Edin., Obstetric Physician to the Manchester Royal Infirmary; and Lecturer on Clinical Midwifery and the Diseases of Women in Owens College; 11, St. John street, Deansgate, Manchester. *Council*, 1868-70, 1880-2. *Vice-Pres.* 1871-2. *Trans.* 5.

1867 ROBERTS, DAVID W., M.D., 56, Manchester street, Manchester square, W.

1883 ROBERTS, JOHN CORYTON, L.R.C.P. Ed., Avenue House, Peckham Rye, S.E.

1874 ROBERTSON, WILLIAM BORWICK, M.D., St. Anne's, Thurlow park road, West Dulwich, S.E.

1887 ROBINSON, HUGH SHAPTER, L.R.C.P. Ed., 40, North Bridge street, Monkwearmouth, Sunderland.

1884 ROBINSON, LUKE, M.R.C.P. Lond., 217, Geary street, San Francisco, California.

O.F. ROBINSON, THOMAS, M.D., 5, Woburn square, W.C.

1886 ROE, ARTHUR DUMVILLE, B.A., M.B. Cantab., West hill, Wandsworth, S.W.

1876 ROE, JOHN WITHINGTON, M.D., Ellesmere, Salop.

O.F. ROGERS, WILLIAM RICHARD, M.D., Consulting Physician to the Samaritan Free Hospital for Women and Children; 56, Berners street, Oxford street, W. *Council*, 1870-72. *Trans.* 4.

1874 ROOTS, WILLIAM HENRY, Canbury House, Kingston-on-Thames.

Elected

1874 ROPER, ARTHUR, Lewisham hill, Blackheath, S.E. *Council*, 1886-8.

1865 ROPER, GEORGE, M.D., Consulting Physician to the Royal Maternity Charity; 19, Ovington gardens, S.W. *Council*, 1875-77, 1883-5. *Vice-Pres.* 1879-81. *Board Exam. Midwives*, 1880-1, 1883-5. *Trans.* 10.

1859 ROSE, HENRY COOPER, M.D., Rosslyn hill, Hampstead, N.W. *Council*, 1875-77. *Trans.* 4.

1887 ROSENAU, ALBERT, M.D., Bath, Kissengen, Bavaria.

1880 ROSS, DAVID PALMER, M.D., Freetown, Sierra Leone.

1883 ROSSER, WALTER, M.D., 1, Wellesley villas, Croydon.

1884 ROSSITER, GEORGE FREDERICK, M.B., Cairo Lodge, Weston-super-Mare.

1885 ROUGHTON, EDMUND WILKINSON, M.D., Nothguor House, Brook Green, W.

1884 ROUGHTON, WALTER, L.R.C.P. Lond., Station road, New Barnet.

1882 ROUTH, AMAND J. McC., M.D., B.S., Assistant Obstetric Physician, Charing Cross Hospital; 6, Upper Montagu street, W. *Council*, 1886-8. *Trans.* 1.

O.F. ROUTH, CHARLES HENRY FELIX, M.D., Consulting Physician to the Samaritan Free Hospital for Women and Children; 52, Montagu square, W. *Council*, 1859-61. *Vice-Pres.* 1874-6. *Trans.* 13.

1887 ROWBOTHAM, HERBERT C., Melbourne, Derby.

1887* ROWE, ARTHUR WALTON, M.D. Dur., 1, Cecil street, Margate.

1881 ROWORTH, ALFRED THOMAS, Grays, Essex.

1886 RUSHWORTH, FRANK, M.B. Lond., Goldhurst terrace, South Hampstead, N.W.

1888 RUSHWORTH, NORMAN, L.R.C.P. Lond., Beechfield, Walton-on-Thames.

1870 RUSSELL, LOGAN D. H., M.D., Government Park Estate, near Spanish Town, Jamaica (2, St. James's road, New Brighton).

Elected

1886 RUTHERFOORD, HENRY TROTTER, B.A., M.B. Cantab., 46, Queen Anne street, Cavendish square, W.

1866 SABOIA, Baron V. de, M.D., Director of the School of Medicine, Rio de Janeiro; 34, Rua do Visconde Maranguapo, Rio de Janeiro. (2, Avenue Friedland, Paris.) *Trans.* 2.

1883 SALTER, FRANCIS JOSEPH, L.R.C.P. Ed., 9, Lyddon terrace, Leeds.

1864 SALTER, JOHN H., D'Arcy House, Tolleshunt D'Arcy, Kelvedon, Essex.

1875* SALZMANN, FREDERICK WILLIAM; Senior Surgeon to the Hospital for Women; 18, Montpellier road, Brighton. *Council*, 1880-2. *Hon. Loc. Sec.*

1868* SAMS, JOHN SUTTON, St. Peter's Lodge, Eltham road, Lee, S.E.

1886 SANDERSON, ROBERT, M.B. Oxon., 99, Western road, Brighton.

1872 SANGSTER, CHARLES, 148, Lambeth road, S.E.

1870 SAUL, WILLIAM, M.D., 44, Bedford square, W.C.

1872 SAVAGE, THOMAS, M.D., Surgeon to the Birmingham and Midland Hospital for Women; 33, Newhall street, Birmingham. *Council*, 1878-80.

1877 SAVORY, CHARLES TOZER, M.D., 6, Douglas road, Canonbury, N. *Trans.* 1.

1886 SCOTT, BERNARD CHARLES, Eversley, Upper Lennard road, Penge, S.E.

O.F. SCOTT, JOHN, F.R.C.S., 10, Tavistock square, W.C. *Council*, 1868-70. *Vice-Pres.* 1871-3. *Trans.* 1.

1870 SCOTT, JOHN, M.D., New street, Sandwich.

1866 SEQUEIRA, JAMES SCOTT, 68, Leman street, Goodman's fields, E., and Crescent House, Cassland Crescent, Cassland road, South Hackney.

1882 SERJEANT, DAVID MAURICE, M.D., 1, The Terrace, Camberwell, S.E.

1875 SETON, DAVID ELPHINSTONE, M.D., 110, Cromwell road, S.W. *Council*, 1884.

Elected

1860 SEWELL, CHARLES BRODIE, M.D., 21, Cavendish square, W., and 13, Fenchurch street, E.C. *Council*, 1880-2.

1887 SHANNON, R. ALEXANDER, L.R.C.P. Ed., The Laurels, St. Mary Cray.

O.F. SHARPIN, HENRY WILSON, F.R.C.S., Surgeon to the Bedford General Infirmary, Bedford. *Council*, 1871-3. *Trans.* 1. *Hon. Loc. Sec.*

1887 SHAW, JOHN, M.D. Lond., Burlington House, Willoughby road, Hampstead, N.W.

1882 SHEARD, WILLIAM FRANCIS, L.R.C.P. Ed., 210, Upper Richmond road, Putney, S.W.

1867 SHEPHERD, FREDERICK, L.R.C.P. Ed., 33, King Henry's road, Primrose hill, N.W.

1886 SIMMONS, FOURNESS, M.B. Edin., 30, Albert terrace, Darlinghurst, Sydney, N.S.W.

1874 SINCLAIR, ALEXANDER DOULL, M.D., Consulting Physician to the Boston Lying-in Hospital; 35, Newbury street, Boston, Massachusetts, U.S.

1876 SIRIGNANO, GIOSUE, M.D., 24, Strada Banchi Nuovi, Napoli.

1884 SLATER, DRUCE JOHN, M.B., 13; St. George's terrace, Gloucester road, S.W.

1879 SLIGHT, GEORGE, M.D., 3, Clifford street, Bond street, W.

1881 SLOAN, ARCHIBALD, M.B., 272, Bath street, Glasgow.

1876 SLOAN, SAMUEL, M.D., C.M., 1, Newton terrace, Glasgow.

1861 SLYMAN, WILLIAM DANIEL, 26, Caversham road, Kentish Town, N.W. *Council*, 1881.

1867 SMITH, HEYWOOD, M.D., 18, Harley street, Cavendish square, W. *Council*, 1872-5. *Board Exam. Midwives*, 1874-76. *Trans.* 6.

1888 SMITH, HOWARD LYON, L.R.C.P. Lond., 80, Tollington park, N.

1875 SMITH, RICHARD THOMAS, M.D., Physician to the Hospital for Women, Soho square; 53, Haverstock hill, N.W.

1886 SMITH, SAMUEL PARSONS, L.K.Q.C.P.I., Park Hyrst, Addiscombe road, Croydon.

Elected

1882 SMITH, STEPHEN MABERLY, L.R.C.P. Ed., Yarra street, Geelong, Melbourne. [Per Henry M. Smith, 17, St. Bride street, Ludgate circus, E.C.]

1879 SMITH, WM. HUGH MONTGOMERY, L.R.C.P. Ed., 24, London road, West Croydon, Surrey.

1876 SNELL, EDMUND GEORGE CARRUTHERS, 102, Bonner road, Victoria park, E.

1882 SNELL, GEORGE, L.R.C.P. Ed., Fort Canje, Berbice, B. Guiana.

1868 SPAULL, BARNARD E., Lynwood House, 47, Hammersmith road.

1888 SPENCER, HERBERT R., M.D., B.S. Lond., Assistant Obstetric Physician to University College Hospital; 60, Gower street, W.C.

1876 SPENCER, LIONEL DIXON, M.D., Bengal Army [care of Messrs. Grindlay and Co., 55, Parliament street].

1882 SPOONER, FREDERICK HENRY, M.D., Maitland Lodge, Clapton, E.

1876 SPURGIN, HERBERT BRANWHITE, 45, Abington road, Northampton.

1884 STANSBY, CHARLES JOHN, M.D., 10, Strand, Derby.

1884 STARKIE, RICHARD FRANCIS, M.D., 47, Sussex street, S.W.

1886 STEAVENSON, WILLIAM EDWARD, M.D. Cantab., M.R.C.P., 39, Welbeck street, W.

1884 STEVENSON, EDMOND SINCLAIR, F.R.C.S. Ed., Strathallan House, Rondebosch, Cape of Good Hope.

1877 STEPHENSON, WILLIAM, M.D., Professor of Midwifery, University of Aberdeen; 297, Union Street, Aberdeen. *Council*, 1881-3. *Vice-Pres.*, 1887-88. *Trans.* 1.

1886 STEWART, EDWARD, M.D. Brussels, 16, Harley street, W.

1873 STEWART, JAMES, M.D., 2, Skinner street, Whitby, Yorkshire.

1875* STEWART, WILLIAM, L.R.C.P. Ed., Highfield House, Barnsley, Yorkshire.

1876 STEWART, WILLIAM EDWARD, F.R.C.S. Ed., 16, Harley Street, W.

Elected

1884 STIVEN, EDWARD W. F., M.D., The Manor Lodge, Harrow.

1884 STIVENS, BERTRAM H. LYNE, 11, Kensington gardens square, W.

1883 STOCKS, FREDERICK, 421, Wandsworth road, S.W.

O.F. STOWERS, NOWELL, 125, Kennington park road, Kennington, S.E.

1866 STRANGE, WILLIAM HEATH, M.D., 2, Belsize avenue, Belsize park, N.W. *Council*, 1882-4.

1871 STURGES, MONTAGUE J., M.D., The Limes, Beckenham, Kent.

1884 SUNDERLAND, SEPTIMUS, M.D., 155, Gloucester road, South Kensington, S.W.

1886 SUTCLIFFE, ARTHUR EDWIN, 345, Stretford Road, Manchester.

1883* SUTHERLAND, HENRY, M.A., M.D. Oxon., M.R.C.P., 6, Richmond terrace, Whitehall, S.W.

1862 SUTTON, FIELD FLOWERS, M.D., Balham hill, Clapham, S.W.

1859 SWAYNE, JOSEPH GRIFFITHS, M.D., Physician-Accoucheur to the Bristol General Hospital; Harewood House, 74, Pembroke road, Clifton, Bristol. *Council*, 1860-61, *Vice-Pres.* 1862-64. *Trans.* 9. *Hon. Loc. Sec.*

1888* SWORN, HENRY GEORGE, L.K.Q.C.P. & L.M., 16, Albion road, Holloway road, N.

1883 TAIT, EDWARD SABINE, M.B., 54, Highbury park, N. *Trans.* 1.

1879 TAIT, EDWARD W., 54, Highbury park, N. *Council*, 1886-7.

1871 TAIT, LAWSON, F.R.C.S., Surgeon to the Birmingham and Midland Hospital for Women; 7, The Crescent, Birmingham. *Trans.* 12.

1880 TAKAKI, KANAHEIRO, F.R.C.S., 10, Nishi-Konyachō, Kiōbashika, Tokio, Japan. *Hon. Loc. Sec.*

1871 TANNER, JOHN, M.D., F.L.S., Physician for Diseases of Women, to the Farringdon General Dispensary; 19, Queen Anne street, Cavendish square, W.

Elected

1859 TAPSON, ALFRED JOSEPH, M.B. Lond., 36, Gloucester gardens, Westbourne terrace, W. *Council*, 1862-64.

1863 TAPSON, JOSEPH ALFRED, Surgeon to the Clapham General Dispensary; 83, High street, Clapham, S.W. *Trans.* 1.

1871 TAYLER, FRANCIS T., B.A. Lond., M.B., Claremont villa, 224, Lewisham high road, S.E.

O.F. TAYLOR, EDWARD, South lodge, Clapham common, S.W. *Council*, 1882.

1869 TAYLOR, JOHN, Earl's Colne, Halstead, Essex.

1871 TAYLOR, JOHN W., M.D., D.Sc., Rothsay House, Prince of Wales terrace, Scarborough. *Hon. Loc. Sec.*

1885 TAYLOR, WILLIAM CHARLES EVERLEY, M.R.C.P. Edin, 34, Queen street, Scarborough.

1872 TEMPLE, JAMES ALGERNON, M.D., Professor of Obstetrics, Trinity College; 191, Simcoe street, Toronto. *Hon. Loc. Sec.*

1884 THOMAS, GEORGE H. W., 9, Courtenay place, Teignmouth.

1887 THOMAS, WILLIAM EDMUND, L.R.C.P. Ed., Bridgend, Glamorganshire.

1882 THOMAS, HUGH, The Grange, Coventry road, Birmingham.

1867 THOMPSON, JOSEPH, L.R.C.P. Lond., 1, Oxford street, Nottingham. *Trans.* 1. *Hon. Loc. Sec.*

1878 THOMSON, DAVID, M.D., 37, Castle street, Luton, Bedfordshire.

1874 THOMSON, WILLIAM SINCLAIR, M.D., 40, Ladbroke grove, Kensington park gardens, W.

1860 THORNE, GEORGE LEWORTHY, M.B., Lenham, near Maidstone, Kent.

1879 THORNTON, J. KNOWSLEY, M.B., C.M., Surgeon to the Samaritan Free Hospital for Women and Children, 22, Portman street, Portman square. *Council*, 1882-3. *Hon. Lib.* 1884-5. *Hon. Sec.* 1886. *Vice-Pres.* 1888. *Trans.* 6.

1874 TICEHURST, AUGUSTUS ROWLAND, Silchester House, Pevensey road, St. Leonard's-on-Sea.

Elected

1873 TICEHURST, CHARLES SAGE, Petersfield, Hants.

1866 TILLEY, SAMUEL, The Cedars, Cranford, Middlesex.

O.F. TILT, EDWARD JOHN, M.D., Consulting Physician-Accoucheur to the Farringdon General Dispensary; 27, Seymour street, Portman square, W. *Council*, 1867-68. *Vice-Pres.* 1869-70. *Treas.* 1871-2. *Pres.* 1873-4. *Trans.* 7.

1883 TINKER, FREDERICK HOWARD, F.R.C.P. Ed., Brookland House, Hyde, Cheshire.

1887 TINLEY, THOMAS, M.D. Durh., Hildegard House, Whitby.

1879 TIVY, WILLIAM JAMES, F.R.C.S. Ed., 8, Lansdown place, Clifton, Bristol.

1872 TOLOTSCHINOFF, N., M.D., Charkoff, Russia.

1869 TOMKINS, CHARLES P., L.K.Q.C.P.I., Beddington park, Croydon.

1884 TRAVERS, WILLIAM, M.D., 2, Phillimore gardens, W.

1873 TRESTRAIL, HENRY ERNEST, F.R.C.S., M.R.C.P. Ed., Walmer House, Victoria road, Aldershot. *Trans.* 1.

1886 TUCKETT, WALTER REGINALD, 18, Daniel street, Bath.

1865 TURNER, JOHN SIDNEY, Stanton House, 81, Anerley road, Upper Norwood.

1881 TUTHILL, PHINEAS BARRETT, M.D., Royal Victoria Hospital, Netley, Southampton.

1861 TWEED, JOHN JAMES, Junr., F.R.C.S., 14, Upper Brook street, W.

1885 UNDERHILL, EDGAR T., M.B. Ed., Bromsgrove.

1874 VENN, ALBERT JOHN, M.D., Obstetric Physician to the Metropolitan Free Hospital; 27, George street, Hanover square, W.

1873 VERLEY, REGINALD LOUIS, F.R.C.P. Ed., 28B, Devonshire street, Portland place, W.

1887 VORES, ARTHUR, Kettering.

1879 WADE, GEORGE HERBERT, Ivy Lodge, Chislehurst, Kent.

1860 WALES, THOMAS GARNEYS, Downham Market, Norfolk.

Elected

1866 WALKER, THOMAS JAMES, M.D., Surgeon to the General Infirmary, Peterborough; 33, Westgate, Peterborough. *Council*, 1878-80. *Hon. Loc. Sec.*

1870 WALLACE, FREDERICK, 96, Cazenove road, Upper Clapton, N. *Council*, 1880-2.

1872* WALLACE, JOHN, M.D., Assistant-Physician to the Liverpool Lying-in Hospital; 1, Gambier terrace, Liverpool. *Hon. Loc. Sec. Council*, 1883-5.

1883 WALLACE, RICHARD UNTHANK, M.B., Cravenhurst, Craven park, Stamford hill, N.

1885 WALLIS, FREDERICK CHARLES, B.A., B.S. Cantab., 18, St. James's street, S.W.

1879* WALTER, WILLIAM, M.A., M.D., Surgeon to St. Mary's Hospital, Manchester; 20, St. John street, Manchester.

1867* WALTERS, JAMES HOPKINS, Senior Assistant Surgeon to the Royal Berkshire Hospital; 15, Friar street, Reading, Berks. *Council*, 1884-6. *Trans.* 1. *Hon. Loc. Sec.*

1873 WALTERS, JOHN, M.B., Church street, Reigate, Surrey.

1859 WARDEN, CHARLES, M.D., Hon. Surgeon to the Birmingham Lying-in Hospital; 31, Newhall street, Birmingham.

1886 WARE, GEORGE STEPHEN, L.R.C.P. Lond., Middlesex Hospital, W.

1862 WATKINS, CHARLES STEWART, 16, King William street, Strand, W.C.

1887 WATSON, JOHN ADAM, L.R.C.P. & S. Ed., 39, Dennington park, West Hampstead, N.W.

1884 WATSON, PERCIVAL HUMBLE, L.R.C.P. Lond., 72, Jesmond road, Newcastle-on-Tyne.

1884 WAUGH, ALEXANDER, L.R.C.P. Lond., Midsomer-Norton, Bath.

1867 WEBB, FRED. E., 113, Maida vale, W.

O.F. WEBB, HENRY SPEAKMAN, Welwyn, Herts.

1886 WEBBER, WILLIAM W., L.R.C.P. Ed., Crewkerne.

Elected

1884 WEDMORE, ERNEST, M.B. Cantab., Obstetric Physician to the Bristol Royal Infirmary; Druids Stoke, Stoke Bishop, Bristol.

1876 WEIR, ARCHIBALD, M.D., St. Mungho's, Great Malvern.

1867 WELLER, GEORGE, The Mall, Wanstead, Essex.

1887 WELLS, ALBERT PRIMROSE, M.A., L.R.C.P. & S., L M., 20, Derby road, Douglas, Isle of Man.

1886 WELSFORD, GEORGE FRED., B.A., M.B. Cantab., Chaucer's house, Woodstock.

1876 WELLS, FRANK, M.D., Chapel Station, Brookline, Massachusetts.

O.F. WELLS, SIR T. SPENCER, Bart., F.R.C.S., Surgeon in Ordinary to H.M.'s Household; Consulting Surgeon to the Samaritan Free Hospital for Women and Children; 3, Upper Grosvenor street, W. *Council*, 1859. *Vice-Pres.* 1868-70. *Trans.* 5. *Trustee.*

1886 WEST, CHARLES J., L.R.C.P. Lond., Beaminster, Kempshott road, Streatham Common, S.W.

1886 WHARRY, ROBERT, M.D. Aber., 6, Gordon square, W.C.

1876 WHARTON, HENRY THORNTON, M.A. Oxford, 39, St. George's road, Kilburn, N.W.

1870 WHEATCROFT, SAMUEL HANSON, L.R.C.P. Ed., Brandsburton, near Hull.

1860 WHEELER, DANIEL, Chelmsford, Essex.

1887 WHITBY, ROBERT, Harlesden, Willesden, N.W.

1873 WHITE, FREDERICK BROAD, 98, Portsdown road, Maida vale, W.

1882 WHOLEY, THOMAS, M.B. Durh., 49, Milton road, West Kensington park, W.

1883 WICKS, WILLIAM CAIRNS, M.B., South View House, West parade, Newcastle-on-Tyne.

1887 WIGAN, CHARLES ARTHUR, M.B. Dur., Portishead, Somerset.

1877 WIGMORE, WILLIAM, 130, Inverness terrace, Hyde park, W.

Elected

1883 WILKINSON, THOMAS MARSHALL, F.R.C.S. Ed., 7, Lindum road, Lincoln.

1879 WILLANS, WILLIAM BLUNDELL, F.R.C.P. Ed., Much Hadham, Herts.

1879 WILLETT, CHARLES VERRALL, 11, Edith road, West Kensington, W.

1887 WILLIAMS, CHARLES ROBERT, M.B., C.M. Ed., 15, Ivanhoe terrace, Ashby de la Zouch.

1872 WILLIAMS, JOHN, M.D., F.R.C.P., Professor of Midwifery in University College, London, and Obstetric Physician to University College Hospital; 11, Queen Anne street, Cavendish square, W. *Council*, 1875-76. *Hon. Sec.* 1877-9. *Vice-Pres.* 1880-2. *Board Exam. Midwives*, 1881-2; *Chairman*, 1884-6. *Pres.* 1887-8. *Trans.* 12.

1886 WILLIAMS, PATRICK WATSON, M.B. Lond., The Royal Infirmary, Bristol.

1881 WILLIS, JULIAN, M.R.C.P. Ed., 82, Sutherland gardens, Maida vale, W.

1860 WILSON, ROBERT JAMES, F.R.C.P. Ed., 7, Warrior square, St. Leonard's-on-Sea, Sussex. *Hon. Loc. Sec. Vice-Pres.* 1878-80.

1886 WINTERBOTTOM, ARTHUR THOMAS, L.R.C.P. Ed., Worsley road, Swinton, Manchester.

1877 WINTLE, HENRY, M.B., Kingsdown, Church road, Forest hill, S.E.

1887 WITHERS, ROBERT, Lawrence, Otago, New Zealand.

1880 WOODWARD, G. P. M., M.D., 167, Macquarie street, Sydney, New South Wales.

O.F. WORSHIP, J. LUCAS, Manor House, Riverhead, Sevenoaks, Kent. *Council*, 1875-77. *Vice-Pres.* 1883-5. *Trans.* 3.

1881 WORTHINGTON, GEORGE FINCH JENNINGS, M.K.Q.C.P., Highden, Sidcup.

1876 WORTS, EDWIN, 6, Trinity street, Colchester.

1887 WRIGHT, CHARLES JAMES, Surgeon to the Hospital for Women and Children, Leeds; Lecturer on Midwifery to the Yorkshire College; Lynton Villa, Virginia road, Leeds.

Elected.

1886 WYNTER, WALTER ESSEX, F.R.C.S., Templecombe, Twickenham.

1871 YARROW, GEORGE EUGENE, M.D., 87, Old street, E.C. *Council*, 1881-3.

1885 YOUNG, ADAM, L.R.C.P. Lond., Sevenoaks.

1882* YOUNG, CHARLES GROVE, M.D., New Amsterdam, Berbice, British Guiana.

1861 YOUNG, WILLIAM BUTLER, 10, Castle street, Reading, Berks.

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Hours of Attendance: Monday to Friday, 1.30 p.m. to 6 p.m., Saturday, 9 a.m. to 11 a.m., and in the Evenings on which the Society meets, from 7.15 p.m. to 7.45 p.m.

OBSTETRICAL SOCIETY

OF

LONDON.

SESSION 1887.

JANUARY 12TH, 1887.

J. B. POTTER, M.D., President, in the Chair.

Present—38 Fellows and 5 Visitors.

Books were presented by Dr. Battey, Dr. A. Martin, the Edinburgh Obstetrical Society, the St. Thomas's Hospital Staff, and la Société des Sciences Médicales de Lyon.

Robert Wharry, M.D; William G. Holloway, B.A., M.B.Cantab.; and Sidney F. Harvey, L.R.C.P.Lond., were admitted Fellows of the Society.

George F. Welsford, B.A., M.B.Cantab. (Woodstock), was declared admitted.

The following gentlemen were elected Fellows of the Society:—Alexander Louis Achard, L.R.C.P.; Henry Thomas Barton, L.S.A.; William Edwin Barton, L.R.C.P. Lond. (Burwash); Robert Beswick, M.R.C.S; Charles Walter Biden, L.R.C.P.Lond.; Adolphus Edward Bridger,

M.D.Edin.; Dudley W. Buxton, M.D.Lond.; Alfred Goldney Chitty, L.R.C.P.; Francis William Clark, L.R.C.P. Lond. (Croydon); Arthur Edward Dodson, L.R.C.P. and L.M.Ed. (Tooting); Bruce H. J. Gardiner, L.R.C.P.Ed. (East Dulwich); Edwin Climson Greenwood, L.R.C.P; William Herbert Haw, B.A., M.R.C.S.; Edwin Leonard Lees, M.B., C.M.Edin. (Bristol); Leonard P. Mark, L.R.C.P.Lond.; James Maughan, L.R.C.P.Lond.; George Wilkins Moseley, M.B., C.M.Edin.; Horace H. C. Murray, M.R.C.S.; John Inglis Parsons, M.D.Dur.; Thomas Taylor, L.F.P.S.G.; Robert Whitby, M.R.C.S. (Harlesden); Charles Arthur Wigan, M.B.Dur. (Portishead); Robert Withers, M.R.C.S. (Otago); and Charles James Wright, M.R.C.S.Leeds.

George E. C. Jackson, F.R.C.S., was proposed for election.

The following were nominated as auditors of the accounts for the past year:—Mr. F. B. White, Mr. William Gandy, and Dr. John Phillips.

FIBROID OF ONE-HORNED UTERUS.

By Amand Routh, M.D.

Dr. Amand Routh showed a specimen, the nature of which was somewhat doubtful. Dr. W. Griffith's valuable help had, however, pretty clearly proved it to be a fibromyoma of old standing, growing out of, and obliterating, the left cornu of a one-horned uterus.

The history was in many respects interesting. The case was first seen at Christmas, 1884, at the request of a midwife who said the patient was dying and was in labour. The patient had not been unwell for five months; married eighteen months. Three months ago had had severe

abdominal pains, followed by syncope, and remained in bed three days. This attack began similarly. Patient was clearly suffering from shock and internal hæmorrhage, very little blood being lost externally. A decidual cast was found hanging from cervix, but no fœtus was found. There was milk in the breasts. There were two dull dumb tumours in abdomen, one in hypogastrium reaching halfway to navel, the other on left side reaching to rather above that level. These were apparently distinct tumours though in contact. A boggy mass was felt in Douglas's pouch, and appeared to form a part of the central tumour. Uterus three and a half inches inclined to right. Diagnosis made was rupture of extra-uterine gestation cyst.

The patient rallied, and was removed to the Samaritan Hospital. Five days later the temperature rose to 100° F., and both tumours were found larger, and firmly adherent, and continued growing till January 24th, when they reached to navel and border of ribs respectively. The patient then passed into a typhoid state but again rallied, till February 18th (six weeks after onset), when during defæcation she passed from rectum some dark coloured blood-clots, and subsequent vaginal examination showed that Douglas's pouch was not distended as before. Temperature rose in a few hours to 103·6°.

After a few weeks' pyrexia she slowly improved, and July 8th, 1885, in out-patient department, a note was made that the tumours were shrinking or becoming absorbed. In April, 1886, a note says:—"Tumours much less, and quite distinct. Left tumour now resonant, and central one moves freely with sound *in utero*, which is still embedded in central tumour. Urine albuminous, and pulmonary cavities at apices."

Patient died at Brompton Consumption Hospital, and permission to show the specimen was kindly given by Dr. Percy Kidd.

The tumour shown was adherent to top and sides of uterus and bladder, and to the small intestine. It was ovoid, about six inches by four, and was of fibroid hard-

ness, giving a purplish section, with some calcareous plates on the inner aspect of the fibrous capsule. Microscopical sections, kindly made by Dr. H. H. Taylor, proved the existence of both muscular and fibro-cellular tissues.

Dr. Amand Routh believed that the main bulk of the abdominal tumour was of the nature of hæmatoceles, with inflammatory zones around, and that the fibroid now shown was embedded in the mass.

Mr. Doran suggested that the aperture in the posterior wall of the bladder might have been congenital.

Dr. W. Griffith had very carefully examined Dr. Routh's specimen, which if not unique was of great rarity; it was undoubtedly a myo-fibroma of an undeveloped Müller's duct. The specimen consisted of a right-sided uterus and appendages, the left cornu being undeveloped. To the left of the uterus is the tumour, the size of a fist, smooth and spherical, loosely connected to the uterus. From the lower and posterior surface of the tumour the left ovary hangs suspended by its ligament which arises here. A portion of the Fallopian tube, torn in the process of removal, is seen near the ovary. The appearance of the unopened tumour exactly corresponds to specimens of the third and fourth month of gestation in an undeveloped horn. On section of the tumour it was, however, seen to be a myo-fibroma, and this was confirmed by microscopical examination. The tumour is evidently of considerable age and is undergoing two forms of retrograde metamorphosis at the same time, namely, calcification externally and softening internally. The uterus was fixed closely to the bladder by old adhesions, and the opening into the bladder was in the middle of these adhesions. It might be suggested that the tumour was a fibroid of the left Fallopian tube, but the origin of the ovarian ligament made it certain that this was not so. It was impossible to reconcile the clinical history with the specimen as preserved. But Dr. Amand Routh would remember that Sir Spencer Wells and Mr. Thornton, who both saw the patient when very ill, considered the large tumour he had described to be a fibroid, whilst others considered the case to be one of ruptured extra-uterine gestation with hæmatocele, with which the history seemed clearly to accord.

The specimen was referred to a sub-committee consisting of Dr. W. S. A. Griffith, Mr. Alban Doran, and Dr. Amand Routh.

MIDWIFERY AMONG THE BURMESE.

By T. F. Pedley, M.D.,
MEDICAL OFFICER OF HEALTH, RANGOON.

(Received August 2nd, 1886.)

(*Abstract.*)

Burmese women are active, short, and sturdy. They marry at sixteen to eighteen years of age. There is no caste, and they readily accept the aid of a physician. Burmese practice consists largely of incantations, and anatomy and physiology have no share in it. The poorest are best off inasmuch as they can afford less medical interference. The preparation of the lying-in room is described by the author.

During the first stage of labour the patient walks about, and is encouraged to bear down. Later on she squats on the floor, leaning back on a friend behind her. The midwife practises "expression" by the hands and by means of a binder, which is kept on after delivery, but above the navel. Towards the end of the second stage the patient lies on her back with knees drawn up. As the head presses on the perineum the midwife (in case of a primipara) cuts the perineum with her sharpened thumb-nail; without this delivery is considered impossible. The placenta is delivered by pressure, failing this by traction on the cord and insertion of the hand. The after-treatment consists of plentiful wood fires in the room, hot sand-bags, and squatting over the fumes of turmeric. Large quantities of hot water are drunk; hot and spiced foods are administered. The recumbent position is maintained for a fortnight among the well-to-do, for four or five days among the poor. Before getting up the patient has a vapour-bath.

Massage is also practised with a view of restoring parts to

their proper places; this is often very violent and causes descent and backward displacements. The external genitals are kneaded by the foot, and the hip-joints are stamped upon. The discharges are allowed to putrify on the clothes. The child is a good deal manipulated, to get its limbs supple and straight.

In obstructed labour the midwife stands on the uterus and kneads it with her feet; in extreme cases a pole is placed across the abdomen and pressure made by the attendants resting their whole weight on both ends.

The European physician is generally called in only to cases which have defied native treatment.

Tetanus is common.

In malpresentations, pushing from above, pulling from below, and the removal of fœtal parts piecemeal, is the rule, large hooks being used.

Statistics of mortality are quite untrustworthy, as the cause of death is concealed; the mortality is, however, very large.

The remedy is, in the author's opinion, the instruction of Burmese midwives.

(A series of valuable illustrations by a Burmese artist are appended to the paper and have been placed in the Library.)

Burmese women lead busy, active lives, much in the open air. Besides the purely household duties of sewing, cooking, tending children, &c., they—especially the lower classes—carry considerable weights on the head for long distances, weave, pound rice, and collect firewood.

In Lower Burmah, they are not, however, drudges of all work, as are women in many parts of India.

The common height is between 4 ft. 6 in. and 5 ft. 3 in. The figure is usually broad, and for women muscular; legs rather short, with sturdy calves. The clothing consists of a loose white cotton jacket, reaching to the waist, and a single silk or cotton garment from waist to foot, open in front a little above the knees, so as to expose one leg in walking. A loose flat slipper or sandal is worn. There is no constriction by dress about the waist.

Burmese women marry at about sixteen to eighteen the

husbands of their choice, and if they escape the many dangers of childbirth, frequently have large families.

Burmese women (according to the unanimous verdict of Europeans who have resided in the country) are more intelligent and industrious than the men.

In Burmah caste, with its social rules and restrictions, is unknown, and, unlike the women of India, Burmese women freely accept the aid of Europeans or their own male physicians.

Burmese medical practice largely consists of the more or less ignorant use of a few active drugs, found in every Indian bazaar, and of a large number of innocent substances whose medical properties are dependant on their rarity, curiousness, or the effect of charms and incantations used during their preparation or administration.

Burmese doctors neither read books nor take notes. Their knowledge has been handed down by tradition from older men, and is supplemented by practice. The only medical works in the language are metaphysical dissertations on the contending elements of earth, air, fire, and water; the influence of heavenly bodies, and natural phenomena; fables of horology and astrology, without a trace of anatomical or physiological fact. Much importance is given by the Burman doctor to the dieting of his patient; articles of food, the names of which commence with a certain letter, should be taken or avoided by a person with a certain name, or born on a certain day. Lucky dates, numbers, words and letters, with the interference of good or evil spirits, all go to form the fog of superstition which has hitherto hidden from him true science in reason and nature. The tenets of the Buddhist monks preclude them from the study of medicine, so that unfortunately the most educated class—who, if allowed, would probably have effected some good in the relief of the sufferings of their people—have paid no attention to the subject.

With such physicians what can we expect of the midwives? These women are generally of the poorest and

lowest class, often much advanced in years, whose right to practise is chiefly grounded on the fact that they have been mothers and grandmothers of many. None of them have—any more than the doctors—the slightest acquaintance with scientific midwifery. Anatomy is unknown, and hygiene undreamt of. So long as everything is natural and labour rapid, they do not do much harm, although even in these cases their method is such as to do all the harm possible. Frequently they are decrepit hags, half blind with age. The more aged, the more boldly and obstinately they adhere to what they consider the proper method of procedure, and the more highly are they respected. Of course new methods, or any kind of innovation or interference, are stubbornly resisted.

Fortunately Nature is kind to the mother, and in the majority of cases carries her safely through; and this immunity is more common among the poorer, and therefore more active women, whose means will not allow them the luxury of being attended by several of these women, or of lying by for a lengthened period.

But there is, in Lower Burmah at least, very little true poverty, and every expecting mother lays by for the event what she can, according to her station. In Madras and some parts of India the midwife's fee is a miserable pittance of a few pence. In British Burmah the woman must be badly off who cannot save five rupees; and the midwives are paid sums varying from that amount to thirty or even forty. A large store of firewood is also laid in (from one to two hundredweight). If she cannot afford to buy this the woman collects it herself for months before her delivery. The confinement usually takes place in part of the large upper room of the house, which is divided off by hanging a thick curtain or screen across it. If the husband can afford it, and there is space near the house, a temporary room of bamboo and mats is erected; the birth takes place there, and the mother remains there till convalescent. There is no notion of choice with regard to the sanitary surroundings of the patient, all

Burmese houses being built with the floor a few feet from the ground, and supported by posts. The ground beneath the loose floor of bamboos may be, and often is, a quag-mire of filth. It is almost impossible to shut fresh air out of an ordinary bamboo house, but every effort in that direction is made with regard to the lying-in room, chiefly with the intention of preventing the entrance of smell from cooking operations, the odour of burning oil or fat, according to Burmese notions, being fearfully injurious; illness and death is often attributed to it.

In one corner of the room a flat fireplace is prepared by putting a layer of bricks on planks, and covering these with sand. On this a wood fire is made, and water in a large earthen pot set boiling. No chimney is provided, and the smoke from the fire sometimes renders the air of the apartment stifling. A number of female friends usually surround the woman, and on the other side of the curtain which divides the apartment a crowd of men and women squat for hours, smoking and chewing betel. As soon as the pains commence the woman walks about, occasionally seeking support by leaning on the shoulders of her attendants, and is encouraged to aid expulsive efforts by pulling on a rope or long strip of cloth hanging from the rafters of the hut. As the pains increase she squats on the floor, and leaning back in a half sitting posture is supported by a person sitting on the floor behind her. The midwife then places her hands upon the abdomen of the patient, and as the pains come on gives a succession of hard pushes, increasing in violence with the pains. A silk scarf or cloth is rolled up, and tied like a rope tightly round the body above the fundus uteri, with the idea of preventing the child returning to the former position as the pains subside. This band is kept on and drawn tighter until some time after the expulsion of the placenta, which, it is supposed might, with the uterus, rise into the chest. There is no idea of compressing the uterus or restraining hæmorrhage with this bandage after birth has taken

place, for it is kept high above the umbilicus. As the head progresses the woman is laid on her back on the floor with the knees drawn up. Women sit close around her, some holding her legs, others her arms, or supporting her head, while invariably one or two women press with their hands on the abdomen, frequently with all their might. When the head presses upon the perineum the midwife leaves the pushing to others, and if it be a first child makes a tear in the perineum with her thumb-nail, which is allowed to grow sharp and long for this purpose. This is done at all first confinements, as it is supposed that unless the outlet is thus enlarged it is impossible for a woman to be delivered. In other cases the perineum is regarded as a useless obstruction, and is pulled at and unnecessarily retracted. Directly the head is born the child is rapidly extracted, pressure on the abdomen being kept up until birth is complete. Usually the cord is tied with a piece of string, and cut with scissors or knife; often it is not severed until after the expulsion of the placenta.

After waiting a short time further pressure is made upon the abdomen to expel the placenta. Should it not come away readily the cord is pulled on; failing this the hand is unhesitatingly passed into the passages and the placenta dragged out. If any difficulty occurs in its removal it is torn away piece by piece.

After the birth of the child and the removal of the placenta the mother is washed and the whole body rubbed with turmeric. Pills of saffron, black pepper, and salt, are administered, and saffron is plastered about the vulva. The woman is then laid on a low cot or couch of bamboo about a foot high from the floor, or lies on a mat on the floor placed close to the fireplace, upon which wood is piled and a smouldering fire kept up, or earthern pans of burning embers are brought to the bedside. The smoke is often very distressing, causing irritation of the conjunctiva in both mother and child. Hot bricks wrapped in rags and bags of hot sand are placed about the body,

chiefly on the abdomen, and twice a day the patient is made to squat over the smouldering embers upon which turmeric has been thrown, or over steam arising from hot bricks. In this process the abdomen is freely exposed to the heat. The belief is that the heat thus penetrates to the internal parts and heals them. Hot water in large quantities is swallowed. Food, both solid and fluid, is heated. Soup containing a small amount of animal matter and a large quantity of garlic, black pepper, and salt, is given. The diet is low, the solids chiefly consisting of salt fish and rice. Beyond rising for the purposes of using the fire and for the calls of nature, the better class of women scarcely move from their beds for a fortnight. The poor cannot afford to lie by so long, and get up in four or five days.

The application of heat is kept up for the first seven days. On the eighth or ninth the woman is surrounded with a larger supply of hot bricks, and covered from head to foot with thick clothes, blankets, &c. Heavy curtains are closely drawn round the bed, and she is then for some hours submitted to a very severe vapour-bath until free perspiration is induced. The heat is then lessened, and the blankets, &c., removed. She is then bathed in some open place, where the air freely blows, with a large quantity of cold water. The constant sweating during the first week, terminating with a vapour-bath, generally leaves the patient much exhausted. During the last a miliary rash is developed, which is looked upon as a very good sign.

A very important part of Burmese medical treatment in many general diseases is shampooing, massage of the limbs, and, in fact, of the whole body. The lying-in woman has to submit to this for hours together. When applied to the weary limbs and muscles of the back the process is grateful and beneficial, but the midwife pays too much attention to the abdomen with a view to putting its contents in their normal position and expelling bad humours. Therefore she often uses great pressure over

the uterus, causing downward and backward displacements.

Attempts are made by pressure with the foot to restore to their natural condition the swollen external genitals. A curious notion with these people is that the joints, especially those of the hips, are relaxed after delivery, and in order to restore them the midwife stamps upon them with her feet. In some cases permanent injury to the joint and a halting gait are the results.

The Burman woman in health is very clean in dress and person, but in sickness water is avoided, and when lying-in, though she may wash with hot water, her couch and garments are allowed to become offensive, saturated with discharges and the infant's evacuations. An opening is made in the bamboo floor at one corner of the room, and through it on to the ground beneath is thrown everything from the lying-in chamber. It is also used as a latrine by the woman herself.

When the infant has been separated from the mother it is thoroughly washed in cold water, and generally subjected to a good deal of pulling about with the idea that its limbs should be straightened and its joints rendered flexible. At full length it is rolled in clothes, and this constrained position is kept up for a month. During the first twenty-four or forty-eight hours it is kept from the breast, given a little sugar or honey and water, and placed in a warm cot surrounded with clothes and closely covered from the air.

Such is the usual course of events in an ordinary case of rapid delivery, but frequently the process is too tardy to satisfy the ignorant midwives. Pressure is then increased, and additional means taken to expel the child. While the woman is seated in the semi-recumbent posture on the floor the midwife places her foot over the fundus of the uterus, and supporting herself by hanging on to the rope from the rafters, or by holding the shoulders of bystanders, gives a succession of pushes with all her power, increasing them as labour progresses. Sometimes

the obstruction to the exit of the head has only been the gradually relaxing soft parts, but the immense pressure thus brought to bear causes them to give way, and the child is literally shot out.

As may be surmised, however, labour might still be delayed, though the progress would not be what we consider very slow. Then the woman is laid flat on her back, and the midwife, holding on to the rope, stands on the abdomen, kneading it with her feet, endeavouring thus to force out the child.

In extreme cases a still more outrageous method of applying pressure is resorted to. A bamboo pole, a small plank, or the huge double pestle used in pounding rice, is placed across the abdomen, and the attendants throwing their whole weight on to the ends endeavour to expel the child. Needless to say that in both the last cases mother and child usually perish.

The midwifery cases which at present most frequently come under the notice of the European physician among the Burmese, are those in which the native midwives have failed to effect delivery, or in which most serious consequences have followed their crude methods, and he is often called in when it is too late. I will here, without going into minute details of particular cases, describe some which have come under my immediate observation, or have been seen by others, on whose evidence I can thoroughly rely.

Tetanus, though as far as I can learn unknown in parturient European women in India and Burmah, is a comparatively common cause of death in child-bed among Burmese. I have seen several cases, and in all have ascertained that violent pressure to a greater or less extent has been used for several hours. The first case which I saw in Rangoon was that of a Eurasian girl who had been subjected to Burmese treatment. I was called in on the third day after she had been delivered of her first child. I found a long rent in one side of the cervix uteri and a lacerated perineum. She complained chiefly

of inability to swallow. There was not much trismus, but the peculiarity of the tetanic spasms at once attracted attention. No muscles were affected except those of the back of the neck, of the jaws, and of deglutition. Between the spasms the mouth could be partially opened, then the jaws would be tightly closed, the head thrown back. On attempting to swallow any fluid a spasm came on and the fluid was ejected. The contractions gradually spread to the other muscles of the neck and the upper part of the chest. Respiration became impeded, and she died on the fifth day of the attack during a spasm which apparently closed the glottis. In this case the midwives had for several hours used pressure with their hands.

Another case occurred in which two women had stood upon the abdomen of a robust Burmese woman in her first confinement. The child had been forced through the soft parts, the perineum being ruptured, and a rent two inches long made in the rectum. Tetanus set in on the second day, the muscles of the jaws being first affected, then those of deglutition. She managed with the greatest difficulty to swallow small quantities of fluid for a day or two, sucking it through the clenched teeth. Even this soon became impossible. Chloral was given in rectal injections and extract of calabar bean hypodermically. She lingered eight days. In this case the muscles of the limbs and lower part of the trunk were not affected, but, as in the previous one, those of the neck and chest only. Respiration becoming shallower and more impeded mucus and saliva gradually accumulated in the air-passages until suffocation slowly took place. The lochia were healthy; the temperature did not rise above 102° F. A post-mortem examination was made, the condition of the uterus was normal, and nothing found besides the laceration of the perineum and bowel. Cases occurred in which there was no discoverable laceration of the soft parts, including two which were examined after death.

In some ten cases with one exception the tetanic seizures followed the same course, being chiefly confined to the

muscles of deglutition and respiration, the patients succumbing to the disease between the seventh and fourteenth days.

The exception referred to was that of a Burmese girl of sixteen. A good deal of pressure was used with the hands during the birth of the first child. The perineum was not much torn. The wound was healthy. In her case tetanus commenced on the third or fourth day. The muscles of deglutition and respiration not being affected, the jaws could be partially opened and there was no difficulty in swallowing. The muscles of the limbs, back, and back of the neck were at times strongly contracted, there being well-marked opisthotonos. In this case chloral was used alone, and for twenty-six days she was kept more or less under its influence. The spasms were at times very severe, but subsided under a fresh dose. When she felt them coming on she called for her medicine; she would be awakened by the pain, take some fluid nourishment and her draught and doze off. She made a good recovery after having consumed nearly half a pound of the drug.

I am told that cases of tetanus in parturient women in India are rare, and have been unable to ascertain if they have the peculiarities described. Some of my confrères in Burmah have noticed these peculiarities of the disease in lying-in women, and, with me, attribute the disease to the effect of the violence upon the nervous system.

In abnormal presentation the Burmese midwife has apparently no idea of turning. The squeezing and pushing above described takes place. The hand is inserted and the presenting limb or part dragged upon, torn, or cut off, and a fresh part seized which is served in the same way. The child is often thus cut to pieces, if dragged out entire it is dead. In these operations a hook of bamboo is sometimes used to pass over the flexures of the limbs, and large fish-hooks to remove the severed head. These things are used with a violence and clumsiness which

shows no respect for the maternal structures, which are, of course, fearfully lacerated.

Even in breech cases traction is immediately made on the body, and extension of the head produced, with generally fatal result to the child.

Rupture of the uterus occurs with rapidly fatal result, or the patient sinks from exhaustion and hæmorrhage undelivered, and without rupture having apparently taken place. I have seen more than one case, and have heard of several, in which midwives began to apply pressure on the abdomen on the first and slightest sign of uterine pain, and I have been told of cases by credible witnesses in which they have deemed it advisable to begin before there were any signs whatever of commencing labour, having come to the conclusion that the woman had gone beyond term.

Here it would be advisable to give what I believe is the superstitious ground for these extraordinary practices. As I have said, the object of the measures taken is to remove the child as quickly as possible, and at almost any risk to it and the mother. Intermingled with Burmese Buddhism is (to a much greater extent than would be admitted by a strict follower of Gautama) the confirmed belief in the existence of numberless ghosts and spirits, good, bad, and indifferent. To gain their good offices or avert their evil influence is to the vast majority of the people of these regions (probably millions are not worshippers pure and simple) the impulse of religious zeal, which directs them in the most important as well as the most trifling affairs of life. Every natural object has its guardian "Nat" or demon, and the ghosts of deceased friends or enemies work good or ill to the living. The souls of those who die sudden or violent deaths, from cholera, or smallpox, become malevolent spirits. The worst of all being, probably, that of a woman dying in childbirth. If she is buried undelivered, the spirits of mother and child become a kind of compound vampire, which will haunt and bring misfortune upon the husband and rela-

tives, so say the Buddhists. The mother in every stage of future existence will be born pregnant and die undelivered. These fables are believed all over Burmah proper, and by many of the wild tribes of the neighbouring regions. Portions of a woman so dying are supposed to act as powerful charms and medicines against physical and supernatural dangers, and bodies are actually stealthily disinterred for the purpose.

The fear which is next greatest to the death of the mother is that of her dying undelivered, and means are taken to attempt the removal of the child though both be dead. I was called quite recently in Rangoon to a case in which a fine young primipara had suffered for three days all that three or four midwives could inflict; too late, however, she had just expired. The relatives begged me even then to remove the child if possible. The presentation was normal and the os not completely dilated. To satisfy them I removed the child with forceps quite easily. In this case violent measures had been used for a long time before labour had actually commenced. Dr. Maria Douglass was with me at the time, and described a case she had seen, in which after rupture of the uterus, the child being easily felt loose in the abdominal cavity, the husband, soon after the woman's death, himself removed the child through an incision he made in the abdomen with a "Dah."

Religion and superstition seem to dictate to the midwife her first and guiding rule, to extract the child, and that as quickly as possible. But, indeed, I believe that the Burmese women are of all others little in need of assistance, and wish that our own countrywomen suffered as little as they do when nature is left to her work. The pelvis is roomy, and the moulding of the head to the osseous portion of the passage is a more rapid process and much less extensive. The caput succidaneum is rarely seen. The head after birth is rounder than in the European infant.

In watching the process of childbirth among these races

one is struck with the power of the expulsive efforts and the force exerted by the abdominal muscles, and lead irresistibly to the inference that to the enfeebling of the abdominal muscles by constriction, and to the use of artificial supports about the waist practised by European women, is due much of their unnecessary suffering at this time, besides the continued relaxation of the abdominal walls so common long after delivery. "The figure" is rapidly recovered with native women, even after having had several children.

Other serious consequences of the use of severe pressure have been described to me by native hospital assistants, even rupture of the liver, bladder, or other abdominal organs. The instances in which post-mortem examinations have been made have been in a few of the most outrageous cases coming immediately under the notice of the civil surgeons. The people themselves have the greatest horror of such an examination, and the local government has shown itself so backward in any attempt at either suppressing the practice or teaching the people better, that those who have interfered have become disheartened or disgusted.

Rupture of the perineum, followed by all its miserable consequences, is frequent; besides the causes already described it has been known to be effected by the midwife placing her great toe in the passage—the woman lying on her back—and pressing downwards, or inserting two fingers into the anus and—the woman being turned on her side—dragging it backwards. The pressure used for the expulsion of the placenta is often too severe and ill-directed, and the uterus is wholly or partially extruded, to be roughly shoved back by the hand or heel. I should mention that in cases of difficulty in removing the placenta it is frequently the custom to excite efforts of vomiting, this is effectually done by pushing a tress of the woman's hair to the back of her mouth. The bricks and sand are often applied painfully hot, and the skin of the abdomen sometimes scorched. The exposure of the abdomen and

external genitals directly to the heat of the fire is often regarded by the women as more agonising than the pains of childbirth.

Death from flooding is frequent, apparently from the weakened state of the uterus after the effects of continued pressure. The application of the hot bricks to the abdomen and external genitals probably saves lives by rousing the organ to fresh contractions. I have found it very useful in Burman houses, where I have been called, generally in cases of difficulty, to apply a hot brick or stone over a relaxing uterus, and, when unable to procure ice, I have used, in a European house, a soda-water bottle filled with hot water. The intermittent application has—especially in a thin patient—much the same effect as ice. The reason of the application of heat in this special instance probably has a foundation in fact, but it has been forgotten. It is applied continuously, and has for its object the healing of the internal parts, and the removal of noxious humours and bad blood. The effect is on the whole to increase enormously the quantity of the discharges. The more the patient loses and the freer the flow of the lochia the better pleased are the attendants; and here, in all probability it has its value, for cases of septic fever are apparently not as common as might be expected from the nature of the surroundings and climate. Puerperal fever is recognised by Burmese midwives, and seems to be more frequent after abortion. They ascribe it to the rotting inside the womb of parts which they have been unable to remove and the retention of noxious discharges. In these cases, and in arrest of the lochia from any cause, heat is continuously and vigorously applied; also in retention of urine, for they have no idea of the use of a catheter in any stage of confinement. The bladder is often found enormously distended before delivery is complete, and I have often been called upon to relieve its temporary paralysis with the consequent miseries. As before mentioned, the bladder in some such cases has been ruptured by pressure.

In attacks of faintness or feelings of weakness, little muslin bags filled with crushed herbs and aromatic seeds are held to the patient's nose. The attendants also blow through these on to the scalp and into the ears. In flooding the nostrils are plugged with crushed leaves of the betel vine.

Saffron is at all stages smeared about the vulva, and after delivery a mixture of saffron, fowls' dung, and salt is sometimes pushed into the vagina, or raw spirits poured in through a bamboo tube.

In fact the low diet, the close, stifling atmosphere, the vapour bath on the seventh day, followed by the cold bath and exposure, and other items, form a part of a system which leaves little for perverted ingenuity to devise towards preventing recovery and retarding convalescence in the most healthy and robust.

I have frequently seen cases which terminated fatally during the second, third, or fourth week, from pneumonia, persistent continued fever, or anæmia and utter exhaustion.

In passing through a Burmese street of Rangoon, or other large town, one may safely guess that this or that woman seen hanging about her door has recently had a child—pale, haggard, weary objects for pity they often remain for months afterwards. The more disastrous effects which constantly come to one's notice are phthisis, prolonged debility, displacement of the uterus, pelvic inflammations, and subsequent barrenness.

It is not surprising that the approaching time of delivery is one of anxiety and misery to the Burman woman and her relatives, especially among the better classes, and with the first child.

Buddhist fatalism then often fails to steady the father or husband, and they dread to hear the cries of mourning which may be raised by those in the lying-in chamber. Burmans have told me that they have taken what they regarded as probably a last farewell of their wives or sisters when the woman was led, weeping, to the place of torture.

In India, systems or methods—if they may be dignified by such a term—of treating women in childbirth vary a good deal in different provinces, but, as far as I can ascertain, the one I have described is peculiar to Burmah, and exceeds them and probably any other in the world in its severity and fatal results.

In the backward state of the country it is impossible to supply statistics. Registration of the causes of death is entirely unreliable, and death in childbirth is considered a disgrace, and frequently attributed to other causes.

In Rangoon last year (1884-85) one death for every hundred births was voluntarily reported, being, I believe, far below the facts. I have known of three cases in one week in one small quarter of the station, and seen, during my five years' residence, many fatal cases in robust women. Two ladies of the American Baptist Mission, who have had a long and painful experience in the Country, and devoted themselves largely to the noble work of relieving the sufferings of Burmese women, are Dr. Maria Douglass of Rangoon, and Miss Haswell of Moulmein. The latter tells me she knows that in one short street in that town nine women died in childbirth in one year. She is now stationed at Amherst, and regrets that her opportunities for good work in this direction are greatly thwarted because the chief midwife of the place is believed to be a witch, and, although she carries out the system with the greatest severity and most terrible results, the women are afraid to offend her by employing others.

Of course stillbirths are very frequent, and infant mortality during the first month is very great. The evils of the Burmese system are known to most of the medical officers, magistrates, and police officers all over the province, and have been for years; but little or nothing has been done by the Government to deal especially with the subject. Burmese women unfortunately will have nothing to do with the public hospitals, and, with the exception of two or three cottage hospitals supported by the American Baptist Missionaries, no special provision exists for these

cases. To the noble efforts of the missionaries is due what little has been done. Besides the hospitals mentioned, they have brought out two or three lady physicians and trained nurses and have instructed a few Burmese women in simple scientific midwifery. The missionaries far more than other Europeans come in intimate contact with the people, and from them I have also heard accounts of great numbers of cases fatal and otherwise.

With the Burmese and allied races, especially in the outlying portions of the province, these things are not done in a corner, and all kinds of Europeans in the district are appealed to for assistance by these simple people in cases of sickness, and the wives of magistrates and police officers have volunteered to me accounts of what they considered shocking treatment, with expressions of deep regret that they could give no assistance.

The only way of stopping this terrible misery and loss of life is to supply properly trained Burmese midwives. The few Burmese women who have been so trained are in great demand among their own people, and make for themselves large incomes.

The Burman woman who has once been attended through her confinement after the European method, will never allow herself to be subjected to Burmese treatment again, and will continually extol the gentleness of the former, the greater freedom from pain and subsequent weakness.

The Burmah branch of the "Countess of Dufferin's Fund" has determined to undertake the training of Burmese midwives, but private benevolence must give hearty support to this Association if it is to effect any good amidst this wilderness of ignorance and superstition. The present Governor of the Province, Sir Charles Bernard, takes great interest in the matter, and it is expected that the Government will deal generously towards this effort of true philanthropy and education.

The Illustrations.

(In the Society's Library.)

I have obtained a few drawings from two Burmese artists illustrative of the methods pursued by their midwives. They were executed by them without prompting or suggestion on my part, and they did not profess to have any special knowledge of the subject, but gave what had probably been described to them by midwives, and what had come under their own notice, occurrences known to every Burman boy and girl.

Of the numbered series:

1. Represents the young wife in full dress.
2. Full time.
3 and 4. Commencing pains and usual position.
5. Ordinary process of delivery and pressure with hands.
6. Pressure with foot.
7. Pressure with bamboo.
8. Cross birth.
9. Massage after delivery.
10. Exposure to fire and rubbing with saffron.
11. Fire, massage, and application of hot sand or stones.
12 and 13. The artist's idea of miliary rash.
14. Saffron and hot water.
15. Final massage.
16. Convalescence.

I should say with reference to the peculiar style of these drawings, which appear rather theatrical, that the artist has probably exercised his talent chiefly on the floral and figure designs so peculiar to Burmese decorative art, and seen in their works of architecture and in metal and wood.

The midwife is generally represented as of darker complexion than her patient, being one from the lower classes. The lighter colour of skin is greatly admired, and considered a sign of gentle birth.

Dr. BOXALL said, I have listened with much pleasure to Dr. Pedley's interesting paper. Of midwifery among the Burmese I must confess I have no personal acquaintance, but having visited the Celestial Empire two years ago, I can speak of midwifery among their near neighbours, the Chinese, from some slight experience. As in Burmah so in China, superstition and sophistry have eaten to the very core of progressive medicine. The Chinese 'Pen-tsau' or 'Herbal,' published three centuries ago, would pass muster among the pharmacopœias of western civilization pertaining to the same period. This work of some thirty-eight or more volumes, contains in a list of nearly 2000 drugs with which it deals, many curious, nonsensical, and disgusting things. But in addition are found many articles common to our pharmacopœia of the present day, exceedingly well described, and their uses for the most part well understood. Even in the remainder many inklings of truth are apparent. Inoculation for smallpox has been practised among the Chinese for hundreds of years. Of the art of amputation and counter-irritation they are perfect masters. But progress, at any rate until quite recently, has been at a standstill. Positive retrogression has occurred; and in no department is this more apparent than in that of surgery. At the present day their surgical operations are for the most part limited to acupuncture, the application of moxa, and the opening of abscesses. The one exception to the low ebb to which surgery has sunk in China is to be found in the boldness with which the Chinese castrate men and remove the testes and ovaries of animals. I cannot speak of ovariotomy among the Chinese, but it may interest the members of this Society to hear, at a time when Great Britain was as yet half over-run by a race of half-naked savages, with what elaboration abdominal section could be performed in the Celestial Empire. Thus, during the Han dynasty (which flourished during the two centuries which immediately preceded and which followed the Christian era) the following occurrence is related in the 'Story of the Three States,' a well-known historical romance published about a thousand years ago—I quote the exact words from a translation: "Dr. Hua is a mighty skilled physician, and such a one as is not often to be found. His administration of drugs and his use of acupuncture and counter-irritants are always followed by the speedy recovery of the patient. If the sick man is suffering from some internal complaint and medicines produce no satisfactory result, then Dr. Hua will administer a dose of hashish, under the influence of which the patient becomes as it were intoxicated with wine. He now takes a sharp knife and opens the abdomen, proceeding to wash the patient's viscera with medicinal liquids but without causing him the slightest pain. The washing finished he sews up the wound with medicated thread and puts over it a plaster, and by the end of a month the place has healed up. Such is his

extraordinary skill." Such is the account as I find it buried in the annals of the past. Medicine and surgery have had their brilliant exponents; these arts, though now for centuries on the wane, have flourished in the past. But the art of obstetrics appears never to have taken root on Chinese soil. The three limbs of the professional tripod—medicine, surgery, and midwifery—are now in China as in Burmah steeped in the depths of superstitious ignorance. During my stay at Hankow I was asked by Dr. Gillison to assist him at a case six miles away in the country. Arrived there the patient was found to have been in labour for no less than eight days and was still undelivered. One arm was protruding from the vagina. Turning was accomplished and delivery effected. The other arm was then found to be wanting, the missing member having been torn from the body some days previously by the midwife in her frantic endeavours to extract the child. This is a fair sample of the cases met with. They could be multiplied indefinitely. *Ab uno disce omnes.* The practices of the Burmese, described so graphically by Dr. Pedley, are faithfully reproduced in the Celestial Empire. One word more before I resume my seat. I refer to the disposal of the after-birth. The Chinese are in the habit of preserving the umbilical cord, and, I presume, the placenta too, in an urn containing charcoal ashes and ultimately burying it. Now, it is a curious fact that a nation, amongst whom cremation at one time was largely practised, should now bury the only part of the body which we are in the habit of committing to the fire. Occasionally, however, the umbilical cord is baked and given in the form of powder to the infant as an antidote against smallpox. This is in perfect keeping with other remedies now in vogue, such, for instance, as the administration of the ashes of a mystic scroll in cases of severe labour, and of tincture of tiger bones in rheumatism, bone diseases, ague, and general debility, and eating the brain of the magpie to increase the thinking power.

Mr. DORAN asked Dr. BOXALL if he had any reason to believe from what he had personally observed that women in the far east suffered disorders incidental to menstruation and pregnancy in consequence of the habit of tobacco smoking, to which, according to the evidence of reliable European authorities, they were addicted from an early age?

Dr. W. GRIFFITH said that, whilst the paper just read was one of considerable interest, and in some future time would be of still more interest as a record of most barbarous midwifery even in the nineteenth century, there was a field open to the gentlemen who had opportunities for observing and studying midwifery amongst various races, to investigate the modifications of the process due to the different conditions present which are peculiar and normal to those races. Sir W. Turner and others are investigating their crania and pelves, and have showed such differences in these

(though most marked in the males yet sufficiently so in the females) as to indicate with great probability that some of the details of the mechanism of labour, including the position of the head at the brim, must be modified accordingly. A very valuable beginning might be made by any gentleman practising in the Andaman Islands, the pelves of this race having a longer conjugate than transverse diameter.

Dr. BOXALL.—As far as my experience went, both among the Chinese and Anamites, no ill effects were visible, though such may possibly occur. It must be remembered, however, in connection with this point that tobacco is throughout China not only smoked in great moderation but is also of a very mild kind. A few puffs from the cigarette and it has burnt away, a few whiffs and the pipe is done. With regard to the remarks which fell from Dr. Griffith, I would point out that not only does the pelvis differ in shape but also the fœtal head, being smaller and rounder, deviates from the type met with among Europeans.

STRICTURE OF THE URETHRA IN WOMEN.

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(*Abstract.*)

The author had measured the female urethra in fifty-five cases in which no urinary trouble was complained of. He found that in the majority No. 17 catheter would pass, and in all but two No. 14. He related six cases of stricture of the female urethra under his own care. He had collected and arranged in a tabular form twenty-three others, which were all that he had been able to find reported. He drew a parallel between the two sexes as to the etiology of urethral stricture, and showed that while it was very much commoner in males its causes were much the same in the two sexes. In both it might be the result of injury (these cases being proportionately commoner in females on account of child-bearing) or of the cicatrisation of chancres. In the female it was sometimes due to growths of so-called lupus of the vulva. In both sexes the chief cause in young and middle-aged subjects was gonorrhœa. In the aged of the male sex enlargement of the prostate was the common form of stricture. In old women there was found stricture due to general fibrous thickening and induration of the urethra occurring without any history of gonorrhœa or other discoverable local cause. The author suggested that as in women the homologue of the prostate gland was the urethro-vaginal cellular tissue, these cases were possibly analogous to enlarged prostate in the male. As to treatment he found that rapid dilatation was so simple and successful that it was preferable to any other method of treatment.

Stricture of the urethra in women is not common, and therefore finds little or no mention in text-books. I

therefore think some cases which I have seen are worth record and comparison with the few similar ones published by others.

Cases of retention of urine in women, from swelling or compression of the urethra, or from nervous causes, are common. Blocking of the urethra by tumours of the bladder or urethra, or foreign bodies, is less frequent, but occurs. These are in a sense strictures of the urethra, and as causes of mischief to the urinary organs are in the female more important than simple narrowing of the canal. This latter is the condition to which I now ask attention.

We cannot speak with precision of stricture of the female urethra until we have some definite idea of what the ordinary size of the healthy female urethra is. To ascertain this, I have measured the urethra in fifty-five patients who had no special urinary trouble. The measurements were confined to adults, the ages of the patients ranging from eighteen to seventy. The size of the urethra was ascertained with Hegar's dilators. Commencing with a dilator larger than was thought likely to pass, the introduction of successively smaller and smaller dilators was attempted, until one was reached small enough to pass. (As everyone may not be acquainted with Hegar's dilators, I may mention that they are cylindrical rods, pointed like the small end of an egg.) The amount of force used in their introduction was about that which would usually be employed in pressing a catheter through a stricture. I made some experiments to ascertain how far the size of the instrument that would pass depended on the amount of force used, and I found that it did not make a difference of more than one size; thus if with strong pressure I could pass No. 11, No. 10 went in quite easily. In some cases the pressure employed produced slight laceration of the mucous membrane; this occurred oftener in the earlier measurements, because in later ones I was careful not to exert force enough for it.

Out of the fifty-five patients, I found that in two

No. 7 Hegar's dilator, which about corresponds to No. 12 catheter, was the largest that would pass.

In eleven, No. 8 was the largest that would pass, a size corresponding to No. 14 catheter. In one of these cases slight laceration of the mucous membrane occurred.

In twenty-one, No. 9 Hegar's dilator, but not a larger one, would pass. This is about equal to No. 17 catheter. In one of these there was slight laceration.

In fifteen, No. 10, but no larger one, could be passed, slight laceration being produced once. This size is larger than No. 18 catheter.

In six, No. 11 was the largest that would pass, once with slight laceration.

In one, the urethra would admit No. 12 Hegar's dilator.

The conclusion is that in most cases the healthy female urethra will admit No. 17 catheter, and in nearly all cases No. 14.

I have gone through the cases to see if age or child-bearing exerted any influence on the size of the urethra, but have not been able to perceive any such influence.

Case 1.—S. R—, aged 36, came to the out-patient department of the London Hospital on October 11th, 1879. She had had two children, the last twelve years ago, and for the last ten years had been a widow. One of the children died at the age of four, from an illness following scarlatina; the other is still alive, is very delicate, had snuffles in infancy, later on something the matter with the nose, attended with discharge and imperfection of speech, and also suffered from a skin disease and from fits. Patient at one time had a discharge, which she thinks she acquired from her husband, who was himself suffering from a discharge at the time. She had never had any skin disease, sore-throat, or loss of hair. At the end of one of her pregnancies she had an illness attended with pruritus, dysuria, and frequency of micturition.

The catamenia were regular, moderate in quantity, and without pain. Appetite not good, bowels confined, no

pain in defæcation. She has occasionally slight leucorrhœa.

Her complaint was that she had pain in micturition, sometimes so bad as to make her call out, and that she had to pass water very frequently, sometimes three or four times in an hour. In other respects than these mentioned she thought herself well.

On examination there was nothing abnormal to be seen about the meatus urinarius, except that it was very small. No. 7 bougie was the largest that the urethra would admit. Nothing else abnormal was detected.

The urethra was dilated by the successive passage of bougies from Nos. 7 to 12. No. 12 required considerable pressure to make it enter, and its passage was accompanied with slight bleeding from laceration of the meatus.

The patient's next visit to the hospital was on October 25th, when she said she was much better. The urethra was further dilated with bougies up to No. 16 (English scale).

January 7th, 1880.—Patient could now go two hours without desire to micturate. Bougies were successively passed until No. 32 (French scale) was reached. This caused much pain, and there was difficulty in getting it past the neck of the bladder.

February 25th.—Patient stated that she could now retain urine without difficulty for three or four hours.

April 7th.—Can retain urine comfortably. Has no pain, and thinks herself quite well. After this date she discontinued attendance.

April 19th, 1886.—Patient attended in answer to an inquiry. She was well since the date of last note until last summer, when for a week she had pain in micturition. Since then micturition has been rather more frequent. Now passes urine two or three times in the course of the forenoon. Catamenia regular; no pain. Appetite good, bowels confined. No pruritus or discharge. No. 16 bougie passes easily.

CASE 2 (reported by Mr. A. K. Gale, Clinical Clerk).—P. L—, aged 55, was admitted into the Hebrew ward of the London Hospital October 23rd, 1880. She said she had always been in good circumstances until the death of her husband four years before admission. When aged about twenty-five had been to the West Coast of Africa, and there suffered slightly from fever. Menstruation began at eighteen, and was always regular, scanty, and not attended with pain. It ceased at the age of forty-eight. Patient was married when aged twenty-eight, and had three children in the first six years of married life; no miscarriages. Appetite always good; bowels usually costive. Has been in the habit of drinking a little beer, no spirits. Seven or eight years ago, as a result, she thought, of catching cold, she found herself unable to pass water, which had to be drawn off. Twelve months ago micturition began to be difficult, and this has gone on increasing till the present time. She can now pass water only with much straining, and does so about every two hours.

She does not remember having had any vaginal discharge, and has never known her husband have anything the matter with his genito-urinary organs.

Patient is well nourished, neither wasted nor obese, and presents no sign of disease other than those about to be described. There are some internal and external hæmorrhoids. Nothing abnormal about vulva or meatus urinarius. On attempting to pass a catheter it is found that No. 3 is the largest that can be passed, and this with difficulty, being gripped by the wall of the urethra. The urethra seems to be uniformly indurated and thickened throughout its whole length, but is not tender on pressure. The uterus is normal as to size, position, and mobility; the vagina is narrow, and the vaginal portion of the cervix uteri atrophied; the os externum is so small as not to admit a fine probe. In every other respect the pelvic organs are healthy. Urine acid and free from albumen.

October 29th.—The resident accoucheur passed successively bougies Nos. 3, 4, and 5. No. 5 was tightly gripped by the urethra, and was left in it a quarter of an hour.

30th.—Bougies Nos. 5 and 6 were passed, and the latter left in the urethra a quarter of an hour.

November 1st.—Patient was examined by Dr. Herman. The urethra appeared to have partially contracted again. The first obstruction was at the meatus, through which no bougie larger than No. 5 could be passed. An inch and a half from the meatus a further obstacle was met with, through which only No. 3 could be passed.

3rd.—The resident accoucheur (Mr. Lloyd Francis) was unable to pass a metallic bougie of any size.

4th.—No. 5 elastic bougie went into the bladder quite easily. No. 4 was left in for a quarter of an hour.

5th.—No. 5 bougie was left in for a quarter of an hour.

6th.—No. 5 elastic catheter was passed by the resident accoucheur. It was tightly gripped by the stricture at the neck of the bladder, and in withdrawing it a small piece, half an inch long, was broken off the end and left behind. It was not felt by a probe passed into the urethra, and it was therefore concluded that it was in the bladder. Patient subsequently passed water without greater difficulty than before.

7th.—The patient was anæsthetised, and the piece of catheter found in the urethra about an inch from the meatus. It was extracted, and the urethra dilated by the successive passage of metallic bougies up to No. 18.

8th.—Patient passes water about every hour, the act being accompanied with slight smarting.

18th.—Micturition is now performed without effort or pain, and patient has perfect control over bladder. No. 12 bougie easily passes. Urine free from pus or albumen. Discharged. Patient has not since come to the hospital, and inquiry has failed in tracing her.

Case 3.—S. E—, aged 56, came to the obstetric out-patient department of the London Hospital on January

20th, 1883. She had had three children, the last thirty-one years ago. Ever since the birth of her first child, which was when she was aged twenty-two, she had suffered from a bearing-down pain, but the womb never came outside. For the same period she had suffered from dyspareunia, which appeared to her to be due to "a substance in the water passage." She had never had any discharge, but had frequently noticed scalding in micturition. She had never had any ulceration of the private parts. Had never known her husband have anything the matter with him. Had had no miscarriages. Menstruation had ceased for seven years; this function had always been regular, but very painful.

She complained of severe pain, felt between the umbilicus and the pubes, whenever she tried to micturate. This had troubled her for about three weeks. About fifteen months ago she had an illness attended with similar symptoms, which lasted three or four weeks, and then got better. She now had much smarting pain on micturition, and continual desire to micturate, obliging her to pass water about every half hour. For three weeks she said she had had very little rest at night and had been losing flesh. The bowels were habitually constipated.

On examination the urethral orifice was found so small as only just to admit a small sound. The uterus was atrophied. No other disease was detected.

She was treated with belladonna and aperients without benefit.

February 19th.—The urethra was dilated with bougies, from No. 5, the largest the urethra would admit, up to No. 10.

24th.—Has had much pain in back and stomach since the dilatation, so that she has hardly been able to get about.

May 2nd.—There has been some improvement since the dilatation, so that she can now hold her urine for two hours.

23rd.—Bougies were passed from 6 to 16 inclusive.

Slight hæmorrhage followed. No. 9 and the succeeding ones were tightly gripped, and their passage, the patient said, caused her "dreadful, burning, throbbing" pain.

June 13th.—Patient can now hold urine three or four hours.

July 7th.—Bougies 6 to 16 now pass easily.

September 12th.—Patient thinks herself quite well.

April 13th, 1886.—Patient attended at the hospital in answer to an inquiry. Now has no trouble at all with micturition; has no pain, and can hold urine as long as she likes. Declines examination.

Case 4 (reported by Mr. H. J. Hawthorn).—M. A. W—, æt. 68. Admitted into the London Hospital November 4th, 1885. She has long suffered from rheumatism. Nine years ago had some abscesses under the knee. Winter cough for the last three years. Had a stillborn child forty-three years ago, her recovery then being lingering.

For the last two years has had a pain in the back, and for the last fortnight pain in the lower abdomen. For the last fortnight has had to pass water more frequently than usual, and has suffered from scalding in passing it.

Patient is white-haired, feeble, and not very clear in her memory. Physical signs of emphysema and slight bronchitis. Urine alkaline, and containing a trace of albumen.

On admission the resident accoucheur was unable to pass the smallest probe available into the urethra. The attempt was repeated next day, but without success.

November 10th.—Examined by Dr. Herman. No. 3 elastic bougie, but no larger one, will enter the meatus, but will not pass further than about half an inch. No. 1 elastic bougie, after entering the same distance, is arrested by an inequality on the floor of the urethra, and when directed more forwards passes on into the bladder. Nos. 2 and 3 pass in the same way, No. 3 being tightly gripped. Per vaginam the urethra feels like a thick, hard cord. The vaginal portion of the uterus is atrophied. There is no other disease of vulva or of vagina.

Metallic bougies, Nos. 4 to 8 inclusive, were then passed.

20th.—Micturition still frequent, and accompanied with pain and straining.

27th.—Under anæsthesia the urethra was dilated with Hegar's dilators up to No. 10, *i. e.* about No. 20, English catheter scale. Urethro-vaginal septum noticed to be much thickened, especially in front.

December 8th.—No very marked improvement since last note. Patient again anæsthetised and urethra dilated up to No. 15 of Hegar's dilators.

12th.—Micturition much less frequent; no pain.

15th.—Passes urine only three or four times daily. No pain. Feels quite well.

March 26th, 1886.—Patient attended in answer to an inquiry. Thinks herself quite well. No pain, difficulty, or undue frequency of micturition. No. 12 catheter passes easily.

March, 1887.—Patient has returned to hospital with symptoms of malignant disease of bladder. No. 12 catheter enters easily.

CASE 5.—R. H—, æt. 40, admitted into the London Hospital November 13th, 1886. (Reported by Mr. S. J. Cole.) Patient had smallpox when aged five. Except this, good health previously.

Began to menstruate at sixteen, and has always been regular, except for a year after first entering domestic service (when aged nineteen) and during pregnancy. Flow copious, and with some pain, but not great pain.

She was married at twenty-four, and has had seven children and two miscarriages, the last child being born two years ago. Her labours were all long, but none instrumental. She only remained in bed a week afterwards, except with the last, when she lay in bed three weeks. She usually suckled the children two years.

She said she had had some difficulty in passing water since the age of seven, but she was not very precise about this. About seven or eight years ago she had a greenish

discharge, different from any that she had ever had before, and with it burning and scalding in micturition. She attended at a hospital for it, and was given medicine, but derived no benefit from the treatment. A month after the appearance of the discharge she had an attack of retention of urine, and was under treatment for five months subsequently. Since then she has had six other attacks of retention of urine, each of them requiring the use of the catheter. The last two of them were within the past twelve months. Two months ago she again began to have a yellow discharge, which was subsequently mixed with blood, but for the last fortnight this has ceased. For about seven or eight years sexual intercourse has been painful. Micturition has been very frequent, about every quarter of an hour during the day, and five or six times during the night, and micturition has been accompanied with scalding. Has been losing flesh for about three months. Has for two months suffered from pain in the abdomen, especially on the right side.

Present condition.—Patient is thin, not anæmic. No signs of disease other than those about to be described. Appetite good. Temperature normal.

Right kidney moveable. Urine contains no albumen, is acid. A cicatricial band in the vagina, on the posterior wall, runs transversely about half an inch below the cervix uteri.

Vascular caruncle at meatus urinarius.

Urethra much thickened and indurated, feeling like a hard thick cord, its greatest thickness being about an inch from the meatus. No. 8 urethral bougie is the largest that will pass, and that with difficulty; it meets with resistance about a third of an inch beyond the meatus.

November 19th.—The caruncle was removed with Paquelin's cautery, and the urethra dilated with Hegar's dilator until No. 16 would pass.

No bad symptoms followed this operation.

December 3rd.—Patient allowed to get up. No pain, difficulty, or undue frequency of micturition.

17th.—Patient discharged from Obstetric Ward, but remains under the care of Mr. McCarthy on account of moveable kidney, as she still complains of pain in right side of abdomen.

This case is a complex one, and therefore not instructive as to the effects of urethral stricture; but it illustrates some points in the history of the disease.

I have seen one other case of this kind, but have no record of the effect of treatment, and only scanty notes of the patient's condition.

CASE 6.—J. D—, æt. 46, came to the obstetric out-patient department on August 17th, 1878. She had had thirteen children, the last thirteen years ago, and seven miscarriages, the last two years ago. Her chief complaint was that she could only pass water when standing up. There was a slight cystocele. The urethra was so small that No. 8 catheter could not be passed until the urethra had been dilated by the successive passage of smaller bougies; but I have no note as to what was the size of the smallest that would pass.

These six cases are the only ones of the kind that I have seen in ten years' hospital practice. The literature of the subject is scanty. Those who have reported cases speak of a very small number as comprising their whole experience of the disease. I have found only twenty-three cases about which details are given. I do not think it worth while to refer to authors who merely mention cases in passing, without furnishing particulars about them. I have found references to a few other cases published in journals which are not accessible in England. I have put the cases I have been able to get in a tabular form, and from this basis (a slender one, it is true, but the only one available) I propose to briefly summarise what knowledge we have of urethral stricture in the female; meaning by this simple narrowing of the canal, not caused by the mechanical effects of normal conditions outside it,

or by blocking by new growths or foreign bodies within it, or by temporary inflammatory swelling of the mucous membrane.

1. *Etiology*—Out of the twenty-eight cases before us, I find four attributed to *injury in difficult labour*.* In two of these (Cases 1 and 2) the nature of the case has been quite unmistakeable, for in both the cicatricial tissue which formed the stricture involved the vaginal wall, and was therefore readily felt. Such injury may be either by direct crushing, or by sloughing in consequence of inflammation. In the only case in which the mode of production is stated it was by sloughing. There is nothing surprising in the production of urethral stricture in this way. Probably the reason why it is not more frequent is that the contractions of the pelvis which lead to such prolonged pressure of the fœtal head as to destroy the soft parts nipped between it and the pelvic bones occur mostly at the brim, and therefore the part of the urinary channel which suffers from such compression is the base of the bladder rather than the urethra.

Cicatrisation of a chancre is another condition answerable for stricture of the female urethra, but it is not a common cause. I find only two instances recorded, one of them being a very doubtful one (Case 5), for the learned reporter of the case did not see the chancre, and only inferred that it had been in the urethra because the patient had secondary symptoms and a stricture. In the other (Case 6) it is stated that the anterior two-thirds of the urethra had been destroyed, which would lead to the inference that the chancre was probably of a phagedænic character.

The two cases which follow those of stricture due to chancre I have included in the table because the author describes them as stricture, but from the description given it seems to me that they were rather cases of *swelling from urethritis* than of what is commonly understood by stricture.

* Winckel gives a reference to another case (which he says is like that of Scanzoni (No. 1)), by Ledetch, 'Wiener Med. Presse,' xiv, 34, 1873. This journal is not in our London libraries.

In a former communication I submitted to this Society a case of *lupous stricture* leading to atresia; and I quoted two other cases of a similar condition. These cases I have placed next in the table.

I have seen one case of *cancerous stricture* of the urethra. I have not put this in the table, because here the stricture is merely an accident in the course of a much more serious disease. The case is published in the 'Lancet,' October 2nd, 1886, p. 627.

The remainder of the cases may be divided into two groups, according to their ages. The nine younger of them were aged from 23 to 53. One of them, aged 46, was only seen once, and that hurriedly, so that a history was not obtained. In every one of the remaining seven there was either certainty or great probability of past *gonorrhœa*. The patient aged 23 had had gonorrhœa several times. The next in age, 28, had the smallest stricture of any, not admitting No. 1 catheter, and this was ascribed to cauterisation for gonorrhœa. The next, aged 32, is said to have given no clear history of gonorrhœa, but its possibility was not denied. Then comes one aged 35, a prostitute with tertiary syphilis, and another, aged 30, is described as a prostitute given to drink; patients more likely to have had gonorrhœa than not. One of my own patients, aged 36, gave a clear history of gonorrhœa and syphilis; another, aged 40, gave a history of discharge and painful micturition. The eldest of the group, aged 53, is said to have had gonorrhœa ten years previously. These cases, therefore, so far as they go, show gonorrhœa as the most common cause of stricture of the female urethra in young and middle-aged subjects.

It is remarkable that the most recent account of stricture of the female urethra, that of Winckel,* contains no mention of gonorrhœal stricture, although Sir H. Thompson, in his description of stricture of the female urethra,† has not overlooked it.

* Billroth und von Pitha's 'Frauenkrankheiten.'

† 'Stricture of the Urethra,' 4th ed., 1885, p. 229.

There remain nine cases. In one of these the age is not stated. The remaining eight all exceed in age the group just considered. Their ages are 53, 55, 56, 58, 63, 68, and two stated to have been between 60 and 70. In six out of the eight a history of gonorrhœa was carefully inquired for, but not obtained. In four out of the eight thickening and induration of the canal is mentioned, and in another the reporter mentions its hardness.

Comparing this summary of the facts with what we know of stricture of the male urethra, it will be seen that there is a close parallelism between the two sexes. In both urethral stricture may be traumatic; a larger proportion being of this kind in the female, on account of the liability to injury of the urinary canal in parturition. In both sexes stricture may (but seldom does, excepting where sloughing has taken place) result from the cicatrisation of chancrous ulceration. In both, strictures in young and middle-aged subjects are most often traceable to gonorrhœa, and in both the elderly are liable to narrowing of the urethra which is not of gonorrhœal origin. In the male, enlargement of the prostate gland is the common cause. The homologue in the female of the prostate gland is the urethro-vaginal cellular tissue; and we find, occurring in elderly women, cases of stricture due to thickening and induration of this tissue. It is impossible, without dissection, in those cases in which the urethra is felt to be thickened, to say to what comparative degree different parts of the circumference of the canal are affected, whether the thickening is uniformly around the tube, or whether it affects mainly the urethro-vaginal septum. The opportunity for dissection can only be hoped for, but must very rarely occur.

The *senile stricture*, that is, general fibrous thickening and narrowing of the urethra without known cause, occurring in elderly subjects, has not, so far as I can find out, been described by any writer on the subject, nor has the probable analogy of these strictures to enlarged prostate in the male been before suggested.

The *symptoms* of urethral stricture in the female are simple, and are such as we should expect. There is irritability of the bladder, with difficulty and often pain in micturition, the urine being expelled in a small stream or in drops, and in some cases the account given includes occasional attacks of retention. The cases in which retention of urine is among the phenomena of the disease occur among both classes of patients. Its occurrence is probably due to the same causes as in the male; temporary swelling or spasm of the canal. Simple spasmodic stricture is described by Larcher,* *i. e.* an attack of retention following a debauch, relieved by the catheter (which passed without difficulty), and not recurring until again brought about by some similar cause. In such a case as this, it may fairly be assumed that the cause of the retention was really analogous to the spasmodic stricture in the other sex. But the frequency of hysterical retention of urine in the female would incline us, unless there were strong reasons to the contrary, to put cases of retention without evident cause under that head, rather than assume that a canal of normal size was closed by swelling or spasm.

The *treatment* of urethral stricture in the female is simple and successful. Among the cases which I have collected in which treatment was carried out with a further aim than the immediate relief of retention, I find four methods practised:

(1) Incision or puncture.

(2) Slow dilatation with bougies, each bougie being left in for some hours, and the treatment thus prolonged over several days.

The only case in which any ill result followed treatment is one which was under the care of Velpeau, and in which slow dilatation was the method of treatment. Suppuration in the inguinal glands on both sides followed.

(3) Rapid dilatation with bougies, each bougie being left in a minute or two at longest, and the dilatation thus quickly carried up to the point desired.

* 'Gazette Médicale de Paris,' 1834, T. ii, p. 790.

(4) Electrolysis: The stricture being, it is assumed, melted down by a galvanic current. Each of these methods has proved successful, and the results have been maintained for a time long enough to warrant the belief that they may be permanent. Comparing them with one another, rapid dilatation is preferable, both from the point of view of the patient and that of the operator, to slow dilatation; and it is just as successful. Electrolysis gives results no better than rapid dilatation, is not quicker, requires apparatus of a more complicated kind, and is more difficult to carry out. I fail to see that it has any advantage over rapid dilatation with bougies.

Dilatation of the urethra with bougies, carried up at least to Nos. 16 or 18 of the English scale, in one operation, therefore seems to me the easiest and quickest way of treating urethral stricture in the female; and the facts show that from it long immunity from symptoms (in one case for three years, in another for six years), and probably cure, may be expected.

Stricture of the urethra in the female is not as a rule a grave disease. But that it may be so is shown by a preparation in the museum of the Royal College of Surgeons of Edinburgh, put there by Sir C. Bell. It is described as follows: (No. 2020, xxxi, G) "Bladder of a woman, æt. 39, ulcerated and ruptured. The urethra is seen to be strictured. The cellular tissue between the peritoneum and abdominal muscles was filled with urine. The stricture is a narrow one, the bladder hypertrophied" (Thompson, op. cit.).

From Injury in Difficult Labour.

No.	Reference.	Age.	No. of children.	Symptoms.	Duration.	Seat.	Size.	Cause assigned.	Treatment.	Result.	How long observed.
1	Scanzoni; Kiwisch, Klin. Vorträge, fortgesetzt von Scanzoni, Band iii, 1855, S. 278	—	—	—	—	Three or four lines behind meatus	—	Sloughing vaginitis (nodule of cartilaginous hardness at site of stricture felt through vagina)	—	—	—
2	Gayet, Gazette Médicale de Lyon, 1868, No. 46	25	1	Almost complete retention of urine; acute cystitis	3 mos.	Just within orifice	—	Annular stricture of vaginal orifice, involving urethra, so that when in straining bladder was forced down, a kink was formed in urethra. Lingering labour; still-born child delivered by natural efforts	Division with knife	Cure	—
3	Curling, mentioned by Adams, Cyclop. of Anat. and Phys., vol. iv, p. 1267	—	—	Difficulty in making water; attacks of retention	28 years	An inch and a half from meatus (much induration around meatus, but aperture of meatus large)	No catheter could be passed	Contusion of urethra in protracted labour	Puncture, followed by dilatation with bougie	—	—
4	Thompson, op. cit., p. 232	43	—	—	Some years	Anterior half of urethra	—	Instrumental labour	Division, followed by occasional passage of No. 10 bougie	Temporary relapses, but greatly improved	—

From Cicatrization of Chancre.

No.	Reference.	Age.	No. of children.	Symptoms.	Duration.	Seat.	Size.	Cause assigned.	Treatment.	Result.	How long observed.
5	Scanzoni; Kiwisch, Klin. Vorträge, fortgesetzt von Scanzoni, Bd. iii, 1855	—	—	—	Several months	Five lines behind orifice	Bougie size of crowquill passed with difficulty	Cicatrix of chancre (patient subject of secondary syphilis)	—	—	—
6	Gazette des Hôpitaux, April 4, 1846, p. 157	29	—	—	—	Anterior ⅓rds of urethra destroyed; rest of canal narrowed	—	Chancres ten years previously	—	—	—
						Cases of Urethritis: Stricture doubtful.					
7	Newman, op. cit.	32	1	"Peculiar pain" referred to urethra; whole urethra "in a state of irritation"	Not stated	An inch from meatus	No. 10 bougie admitted	Granulating surfaces at some points in urethra	Electrolysis, with applications to urethra	Cured	16 mos.
8	Newman, op. cit.	44	6	Soreness and pain in micturition, and scalding afterwards; frequent micturition	Not stated	Three quarters of an inch from meatus	No. 6 bougie passed with some trouble	Mucous membrane of urethra swollen, thickened, and dark red	Electrolysis, with applications to urethra	Cured	A year.

From Lupous Growths.

9	Herman, Obst. Tr., vol. xxviii, p. 267	48	1	Dysuria; retention at times	12 years	Meatus	Atresia	Lupous growths	Puncture	Cure	3 years.
10	Gold-schmidt, Beit. zur Geb. und Gyn., Berl., 1874, Bd. iii, S. 101	35	—	Frequent micturition	6 years	—	Very small catheter	Lupous growths	Gradual dilatation; removal of tumours	Cure	—
11	Thompson, Stricture of Urethra, 4th edition, 1885, p. 231	—	—	Stream of urine small; repeated attacks of retention	Some years	Meatus and canal	No. 1 catheter, tightly held	A little bunch of pale, firm, congested, insensitive excrescences in the situation of urethral opening. (Lupus ?)	Relief with catheter	—	—

Cases with History of Gonorrhœa.

12	Larcher, op. cit.	23	?	Urine passed in drops and with effort	"Some time"	—	No. 1 bougie passed with difficulty	Gonorrhœa several times	Gradual dilatation; bougies up to No. 8 passed and left in many hours	Relieved; bougie passed from time to time to ensure permanency of benefit	A year.
13	Newman, op. cit.	28	?	Difficult parturition; patient "almost powerless to void urine"	2 years	At meatus and half an inch from meatus, and almost the whole urethra to a less degree	No. 1 bougie could not be passed	Gonorrhœa two years previously, treated by injection into urethra of strong solution of nitrate of silver	Electrolysis	Cured	—

No.	Reference.	Age.	No. of children.	Symptoms.	Duration.	Seat.	Size.	Cause assigned.	Treatment.	Result.	How long observed.
14	Larcher, op. cit.	30	?	Repeated attacks of retention	Some months	—	Sound ¼th of an inch in diameter introduced	Probably gonorrhœa; a prostitute given to drink	Relief with catheter	Relieved	—
15	Boucher, Gazette des Hôpitaux, Feb. 7, 1865, p. 61	32	?	Frequent and difficult micturition; occasional retention	Two attacks at 8 years interval	Meatus and neck of bladder	—	Possibility of gonorrhœa not denied, but no clear history	Gradual dilatation each time; sounds left in urethra 4 or 6 hours	Cure, 1st attack. Cure, 2nd attack	8 years. ?
16	Newman, American Journal of Med. Sciences, 1875, p. 433	35	?	Pain and straining in micturition	Not stated	Three quarters of an inch from meatus	No. 5, sound tightly grasped	Tertiary syphilis (a prostitute)	Electrolysis	Cured	17 mos.
17	Herman, *supra*, Case 1	37	2	Severe pain in micturition; frequent micturition	—	At meatus	No. 7 bougie	History of gonorrhœa and syphilis	Rapid dilatations in three operations	Cure	6 years
18	Larcher, op. cit.	53	—	Pain and difficulty in micturition; urine passing drop by drop	7—8 years	—	Finest bougie available passed with difficulty	Gonorrhœa ten years previously	Rest, warm baths, light diet, &c.	"Almost entirely recovered"	—

19	Herman, *supra*	53	7	Occasional retention; frequency and pain in micturition (complicated with urethral caruncle and moveable kidney)	7 or 8 years	One third of an inch from meatus, and one inch from meatus	No. 8 bougie	Symptoms commenced with discharge	Rapid dilatation	Cure	—
						Senile Stricture.					
20	Larcher, op. cit.	63	?	Retention; urine previously passed in drops	Some days; previous attack 17 yrs. previously	Four or five lines beyond meatus	Sound about $\frac{1}{12}$ inch in diameter, passed with difficulty	No history of gonorrhœa, though inquired for	Gradual dilatation	„	6 mos.
21	Churchill, Diseases of Women, 5th edition, 1864, p. 85	60—70	?	Difficulty and frequency in micturition; occasional retention	2 or 3 mos.	Meatus and whole of canal thickened	Very small catheter only sometimes could be passed	Spasmodic	Rapid dilatation with graduated bougies carried out during a fortnight	„	Not stated
22	„	„	„	„	„	„	„	„	„	„	„
23	Herman, *supra*, Case 2	55	3	Difficult micturition; occasional retention; frequent micturition	A year	Whole length of urethra	No. 3 bougie	No cause discovered; urethra thickened and indurated	Rapid dilatation	„	Not known

No.	Reference.	Age.	No. of children.	Symptoms.	Duration.	Seat.	Size.	Cause assigned.	Treatment.	Result.	How long observed.
24	Herman, *supra*, Case 3	56	3	Frequent and painful micturition	3 or 4 weeks	—	No. 5 bougie	No cause discovered	Rapid dilatation; two operations	Cure	3 years
25	Herman, *supra*, Case 4	68	1	„	2 weeks	At meatus and half an inch beyond	No. 3	No cause discovered; urethra thickened, indurated, cordlike	Rapid dilatation; two operations	„	3 mos.
26	Earle, London Medical Gazette, vol. iii, p. 470, 1829	53	—	Continual and urgent desire to pass urine; pain in micturition; cystitis	Many years	Two lines beyond orifice of meatus; stricture a line and a half in thickness	"Common-sized probe" passed with difficulty	—	Division of stricture in two directions, with subsequent passage of bougies	Relief	Not stated
27	Velpeau, Revue Médicale, Paris, April, 1837 (reported by Moissenet)	58	—	Occasional retention	Not stated	—	Very fine stylet only introduced with difficulty	Not known; stricture "hard, fibro-cellular, annular"	Gradual dilatation; bougies left in two hours at a time up to one sixth of an inch in diameter; dilatations occupied five days	Suppuration in inguinal glands of both sides; stricture "cured"	„

Cases incompletely recorded.

28	Larcher, Gazette Médicale de Paris, 1834, T. ii, p. 790	?	?	Retention	24 hours (retention)	Six to eight lines from meatus	No catheter could be passed till after warm bath, then bougie one eighth of an inch in diameter	—	Relief with catheter	Relieved	4 days
29	Herman, *supra*, Case 5	46	13	Difficult micturition	—	—	Less than No. 8 bougie	—	—	—	—

Dr. HORROCKS said that he had seen two cases which would come under Dr. Herman's definition of stricture of the urethra. In both the cause was congenital. In one, a girl of nineteen, there had been difficulty in micturition, chiefly incontinence, from birth. In the other there had been no symptoms whatever referable to the bladder. In the former there were obvious congenital deficiencies and it was impossible to pass a catheter of any sort. In the latter it was only discovered that there was a narrow urethra when an attempt was made to pass a catheter simply to avoid the necessity of the patient getting out of bed to do it herself. It was then found that only a No. 5 gum elastic catheter would pass. She was thirty-two years of age and had been married twice, the first husband having been "gay." There was no history, however, of gonorrhœa. Dr. Horrocks considered that where symptoms resulted from intrinsic narrowing of the female urethra the plan of dilatation advocated by Dr. Herman was the best treatment.

Dr. AUST LAWRENCE (Clifton) agreed with Dr. Herman as to the rarity of stricture of the female urethra, he having only met with two cases in the last fifteen years in the obstetric department of the Bristol General Hospital and in private. One was in an old woman where the urethra felt like a hard cord per vaginam, and there were also some cicatricial bands at the upper part of the vagina. The other case was in a young woman, and most probably the result of specific urethritis. The cases were both cured by gradual dilatation by bougies.

Dr. GALABIN had met with one instance in which stricture of the urethra had led to complete closure, the passage not being kept open by the stream of urine. The patient came complaining of having had, first, difficulty of micturition and, later, incontinence of urine. There were external signs of syphilis, and a vesico-vaginal fistula was found which must have been the result of the breaking down of syphilitic deposit as there had been no parturition nor injury to the vagina. The urethra was obliterated near to the meatus. It was opened by getting a director into the canal from behind and cutting down upon this. Later the fistula was closed by operation. It was uncertain whether the stricture in this case was due to a syphilitic ulceration or to gonorrhœa. In another instance he had met with a stricture so tight as to admit only a No. 1 gum elastic catheter. It was considered likely from the history of the case that this was due to gonorrhœa. He had treated it successfully by comparatively rapid dilatation, not carried out at one sitting, as practised by Dr. Herman, but repeated on several occasions.

Dr. AMAND ROUTH mentioned the case of a woman leading a dissolute life in whom there was an anterior parametritis, which spread along the cellular tissue in the roof of the vagina, embed-

ding the urethra in inflammatory exudation, and causing urethritis secondarily, a double urethral stricture eventually resulting.

Dr. GRIFFITH had the day before at the Samaritan to dilate a stricture of the urethra in a married multipara, aged about thirty years, who was married at fourteen, and though she had never been well since gave no history indicating that she had suffered from gonorrhœa. The stricture was situated an inch and a quarter from the meatus, just admitting a uterine probe. It was dilated in the course of a few minutes with bougies to No. 18.

Dr. HERMAN, in reply, said, that he thought Dr. Horrocks's case of congenital stricture associated with other malformations was of much interest and he hoped Dr. Horrocks would describe the malformations. In Dr. Horrocks's second case (of a patient who had been married to a husband described as "gay") he thought gonorrhœa a more probable cause than congenital narrowness. The two cases related by Dr. Aust Lawrence were instances of the two causes of stricture which were most common, gonorrhœa in the young and general thickening of the urethra (possibly analogous to enlarged prostate) in the old. He had read of contraction of the urethra due to disuse, but had not found a case reported in which the possibility that the narrowing was due to cicatricial tissue and not simply to disuse was excluded. In Dr. Galabin's case it was possibly cicatricial. He had found obstruction to the passage of a catheter in parametritis as in Dr. Routh's case, but he had not been able to watch a case so as to ascertain whether it left behind a permanent stricture.

ANNUAL MEETING.

FEBRUARY 2ND, 1887.

J. B. POTTER, M.D., President, in the Chair.

Present—54 Fellows and 2 Visitors.

The PRESIDENT declared the ballot open for one hour, and appointed Dr. M. Handfield-Jones and Dr. E. S. Tait as Scrutineers.

Books were presented by Dr. Léon Dumas, and the Academy of Medicine of Ireland. A cast of a large sarcoma was presented by Dr. Grigg, and some old obstetrical instruments by Dr. Joseph Thompson.

Alexander L. Achard, L.R.C.P.; Henry T. Barton, L.S.A.; Adolphus Ed. Bridger, M.D.; E. Climson Greenwood, L.R.C.P.; J. Stuart Hutton, L.R.C.P.Lond.; and Edward Stewart, M.D., were admitted Fellows.

William Edwin Barton, L.R.C.P.Lond. (Burwash); A. Goldney Chitty, L.R.C.P. (Hornsey); Francis William Clark, L.R.C.P.Lond. (Croydon); Arthur E. Dodson, L.R.C.P. and L.M.Ed. (Tooting); B. Hubert J. Gardiner, L.R.C.P.Ed. (East Dulwich); Henry L. P. Hardy, M.R.C.S. (Kingston-on-Thames); Herbert C. Hodges, L.R.C.P.Lond. (Watton); Edwin Leonard Lees, M.B., C.M.Ed. (Bristol); Robert Whitby, M.R.C.S. (Harlesden); Charles A. Wigan, M.B.Dur. (Portishead); and Charles J. Wright, M.R.C.S. (Leeds), were declared admitted.

George E. C. Jackson, F.R.C.S.Ed., was elected a Fellow of the Society.

The following gentlemen were proposed for election:—George Mallack Bluett, L.R.C.P.Lond.; Charles J. C. O. Hastings, L.K.Q.C.P. (Toronto); Thomas Grant Langhorne, M.R.C.S.; and Albert Rosenau, L.R.C.P.Lond. (Kissingen, Bavaria).

NOTES OF A CASE OF DILATATION AND HYPERTROPHY OF THE BLADDER IN A FŒTUS.

By F. A. T. O'Meara, M.R.C.S., L.R.C.P.Lond.

Mrs. K. J—, æt. 25, mother of five living and healthy children, with no abnormality. No history of abnormality in family. Seen first afternoon of June 13th, 1886, when examination revealed uterus reaching to umbilicus, fœtal heart-sounds not heard, cervix just admitted finger and was very rigid. Right elbow presentation discovered. After two doses of chloral hydrate, each of gr. xx, given with interval of four hours, the cervix became soft and nearly fully dilated. The membranes had been ruptured two or three days, and the patient stated that "the waters had dribbled from her with large quantities of blood." As hæmorrhage recurred, the patient was placed under chloroform and the child turned by the hand *in utero* by Mr. O'Meara. The legs came round easily, but having drawn the breech through the cervix, it was found on traction that the remainder of child would not descend. Patient allowed to "come to" from chloroform, and after a delay of more than an hour a much-distended abdomen of the child was expressed.

Dissection of child.—Six months' fœtus. Abdomen much distended, and on opening found to be occupied by

a large sac. This proved to be the bladder, much dilated and thickened, and filling up greater part of abdominal cavity. Urethra quite impermeable. Ureters and kidneys normal, save right kidney somewhat cystic. Urachus obliterated. Two cysts on umbilical cord. Brain macerated. No other abnormality of the fœtus.

Dr. JOHN PHILLIPS asked Mr. O'Meara whether there was any excess of liquor amnii in his case. At a recent meeting elsewhere he had endeavoured to prove that fœtal malformations were a much commoner cause of hydramnios than was generally supposed. He was quite sure such irregularities as cyst of the cord, extreme torsion, and enlarged bladder must have some disturbing effect on the equilibrium of the circulation of the cord, particularly that in the umbilical vein.

Dr. MATTHEWS DUNCAN said that among the many cases of imperforate urethra he had observed none had the bladder so little distended as this one. There were many matters of great interest in this condition, and of these not the least was that the bladder might be distended, though the connection with the kidneys by the ureters was cut off.

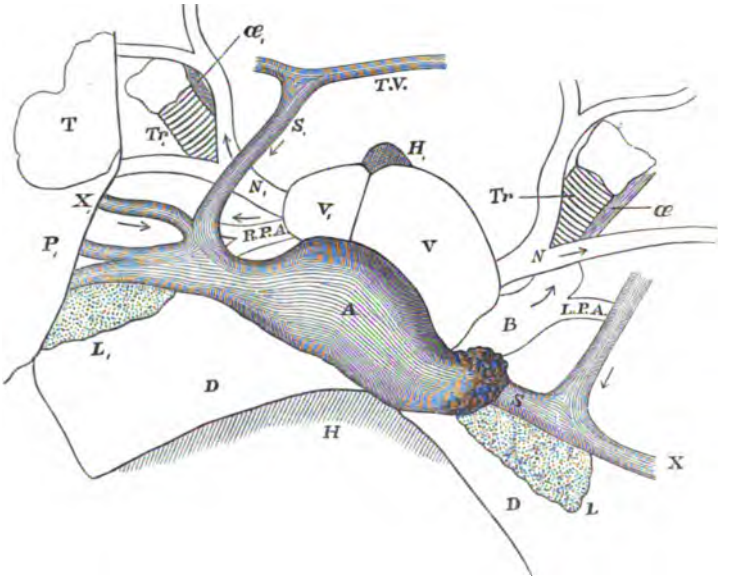
Dr. W. GRIFFITH inquired if the contents of the bladder had been examined, as these cases were of importance in endeavouring to determine the activity of the kidneys in intra-uterine life. The case Dr. Matthews Duncan had referred to, with others recorded, supported the view that as a rule the kidneys did not secrete until birth. Dr. Griffith had collected a considerable number of similar cases of distension of the bladder, but a most remarkable case was one where the fœtal uterus was distended to such an extent with fluid as to give rise to great difficulty in delivery.*

THE HEART AND LARGE VESSELS OF A DICEPHALOUS FŒTUS.

By JOHN PHILLIPS, B.A., M.B.Cantab., M.R.C.P.

THE specimen was taken from the monstrosity shown to the Society at the December meeting. It resembles the reptilian heart in that there are two auricles and a

* See 'Trans. Obst. Soc.,' vol. v, p. 284.



Diagrammatic sketch of heart and large vessels after removal of anterior chest wall and pericardium.

A. Right auricle, stretching across transversely and receiving at its right extremity:
- *S*, The superficial vein from right head.
- *X*, Subclavian vein from right arm.
- *P*, Pulmonary vein from right lung.
- X. A common trunk, formed by deep jugular vein from left head and subclavian vein from left arm.

V, Right portion of common ventricle, giving off:
- *N*, Right innominate artery, dividing into subclavian and common carotid.
- R. P. A. Right pulmonary artery.

V. Left portion of common ventricle, giving off:
- N. Left innominate artery, dividing like its fellow on the opposite side.
- B. Bulbus arteriosus, giving off a large left pulmonary artery (L. P. A.), and a smaller one to the inner lung of left side.

L, *L*. Bases of right and left lungs.
T. Right thymus gland.
Tr, *Tr*. Right and left trachea, with thyroid glands.
œ, *œ*. Right and left œsophagus.
T. V. Transverse vein running into the intercervical integument.
H. Liver, with *H*, its adventitious lobe.
D. Upper surface of diaphragm.

common ventricle with a partial septum; in this interventricular septum is a spurious foramen ovale.

The right auricle receives the blood from the common vena cava, the right pulmonary vein, the common vein from the left head and upper extremity, and that from the right head and upper extremity. It communicates with the left auricle by a foramen ovale and with the right half of the common ventricle through a tricuspid valve. This chamber gives off a right innominate artery, dividing subsequently into a common carotid and subclavian, and a right pulmonary artery.

The left auricle receives only the pulmonary veins from the left lung and communicates, by a well-formed mitral valve, with the left portion of the common ventricle. This in its turn gives off (1) a left innominate artery supplying the left head and upper extremity. (2) A bulbus arteriosus. This after sending off two left pulmonary arteries becomes the aorta, which curving backwards and to the right, runs parallel with the vena cava inferior. A sketch of the parts *in situ* and a schema of the circulation were shown.

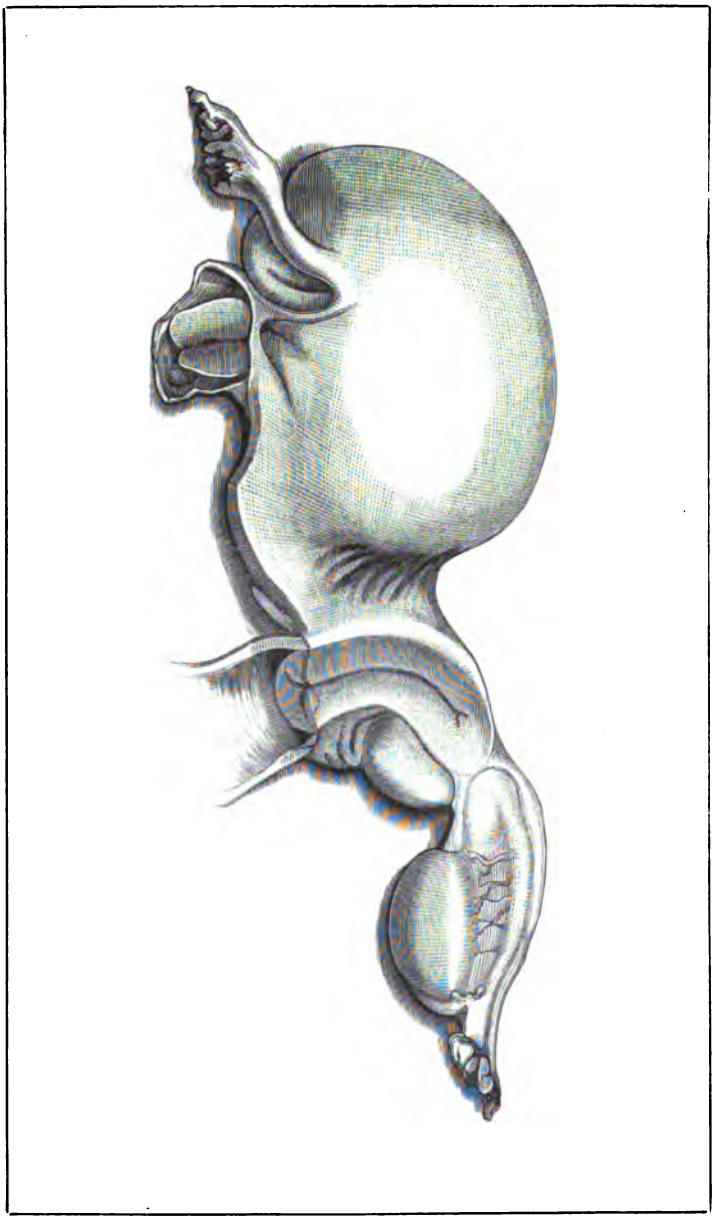
LARGE TUMOUR AT THE END OF THE SPINE (SUPPOSED SPINA BIFIDA?) (LIVING SPECIMEN.)

By P. Horrocks, M.D.

Report on Dr. A. Routh's Specimen of Fibroid of One-horned Uterus. Shown January, 1887 (see p. 3).

We have examined the specimen shown by Dr. Amand Routh at the last meeting, and find it, as described, a fibroid growing from the undeveloped horn of a uterus unicornis.

Alban Doran.
W. S. A. Griffith.
Amand Routh.



Dr. A. Routh's Specimen of One-horned Uterus.

A CASE OF GALACTORRHŒA (UNILATERAL).

By R. A. Gibbons, M.D., M.R.C.P.,

PHYSICIAN TO THE GROSVENOR HOSPITAL FOR WOMEN AND CHILDREN, AND FOR THE DISEASES OF WOMEN AND CHILDREN AT THE ST. GEORGE'S AND ST. JAMES'S DISPENSARY.

(Received October 14th, 1886.)

(*Abstract.*)

A lady, aged 23, who had ceased nursing for six weeks, complained of constant running of milk from the left breast. She was married at nineteen, and the first child was born eleven months afterwards with natural labour. There was abundance of milk in both breasts, and she suckled for five months, after which she gave it up on account of increasing weakness. An abscess formed in each breast, and discharged pus for eleven months. Her second child was born thirty-two months after the birth of the first, and with an easy labour. At first she nursed with both breasts, but after a short time with the left breast only, milk from the right gradually disappearing. She continued nursing for four months, and then ceased because it was thought that her milk disagreed with the child; but the milk continued to flow. Menstruation had not reappeared since the birth of the child, and there was no reason to suppose that she was pregnant, nor could anything uterine be discovered. The urine was normal. Her general condition was anæmic. The milk was of good character, and the average amount in each twenty-four hours was 20 oz. The writer then enumerated the various remedies which had been used in this case to arrest the secretion of milk without result. These included arsenic, iron, strychnia, rest, dry diet, iodide of potassium in small and large doses, belladonna, bromide of potassium, compression of the nipple, quinine in large doses, opium, galvanism, and faradism.

Menstruation reappeared eleven months after the birth of the child, being preceded by a gradual diminution of the flow of milk. After the period the amount of milk steadily lessened, and was arrested soon after the next period, a month later. Her condition became then one of ordinary health, and the breast resumed its natural appearance. Remarks were then made on the case under the following heads:—(1) That the galactorrhœa was unilateral; (2) that the milk secreted was normal in quality; (3) that there was no stimulus of nursing or from the genital organs; (4) that it resisted all treatment; (5) that some time after treatment had been suspended the flow ceased spontaneously on the occurrence of menstruation. Authorities were quoted as to the value of certain drugs in galactorrhœa, and reference was made to the treatment of this affection employed by Abegg, of Danzig, suitable cases being quoted. Details of the treatment adopted by galvanism and faradism were gone into, and authorities with illustrative cases mentioned concerning this method. Reference was made to the experiments of Roehrig to determine whether the nervous or the vascular element has the greater influence over the secretion of milk, with the result of demonstrating that the amount secreted chiefly depends on blood pressure. Sinéty was also mentioned in reference to this matter. In conclusion, the writer remarked that he had failed to find, in searching literature bearing on the subject, any case similar to the one brought forward.

A lady, aged 23, consulted me on October 17th, 1885, complaining that, although she had ceased nursing for six weeks, there was constant running of milk from the left breast, besides irritation of the skin of the breast, chest, and abdomen, and great languor.

The following previous history was obtained:

Menstruation commenced at thirteen years of age, and has always been remarkably regular, even to an hour; it has usually lasted four days. For the first two years it was unaccompanied by pain or discomfort, but for a short time after she was fifteen years old she suffered from pain before the flow was established, from a feeling of sickness, and from headache. During the four or five hours

these symptoms continued she was obliged to lie down and keep at perfect rest. After this period of painful menstruation, which lasted in all about six months, she suffered no further discomfort. She has never been a robust woman although always healthy, having had no illness worthy of note up to the time of her marriage. This took place at the age of nineteen; after which she had two monthly periods as usual. Eleven months after marriage the first child was born, in the country; the labour was an easy one, and more rapid than usual in a primipara. She was told that she had too much milk, and a baby was brought in from a neighbouring village to be suckled. This child, a boy, she nursed for nearly three months, at the rate of three times a day, in addition to her own child.

At the end of five months she returned to London, where she was ordered to stop nursing at once because she was becoming weak; and she was told by her medical adviser that the milk was doing her child, who at this time seemed in a delicate condition, no good.

In consequence she ceased suckling, with the result that she suffered great pain from distension of the breasts, followed by throbbing and formation of matter in each. The abscess in the right breast was opened artificially, that in the left breast burst spontaneously, and they both continued to discharge for nearly eleven weeks, during which time she was in so enfeebled a condition that she could not even walk. In the right breast a second abscess threatened, which, however, passed off without further trouble. There was no inconvenience caused by a continuance of milk, for it gradually disappeared. The patient was a considerable time regaining strength after this illness.

Two years and eight months after the birth of the first child she had her second, on the 22nd April, 1885. The labour was rapid, and the after-progress favourable. She nursed with both breasts at first, but after a short time with the left breast only, the milk having gradually dis-

appeared from the right. She continued nursing for a period of four months, at the end of which time she was recommended to wean the child because the milk seemed to disagree with it. During this period she had four distinct threatenings of abscess of the mamma, none of which became fully developed; but she states that towards the end of the fourth month, after each suckling, the child vomited blood and matter, and that on more than one occasion a small clot of blood was vomited. There was no cracking of the nipples to account for the presence of blood. It was on account of the condition of the child that she ceased nursing. But although she gave it up the milk continued to flow, so that her clothes became constantly saturated, and the skin, for a considerable distance around the nipple, raw and extremely painful. She now went to the seaside, and was there advised to try some belladonna application. According to her own account this seems to have given rise to well-marked belladonna poisoning, doubtless due to absorption. As no lessening of the secretion followed this treatment, and as she felt weaker and more languid, she came to London.

Family history.—As far as I could ascertain no member of the family has ever suffered from galactorrhœa. Her mother, who is not strong and is troubled each winter with bronchitis, had abscesses in both breasts after one confinement, which caused her to give up nursing; but with this one exception she suckled all her family, consisting of five daughters, of whom the patient is the eldest, and two sons. One child was laid up with abscesses on the back, but although none of the other children were robust during childhood they did not suffer in a like manner, and all have become stronger as they have grown older, being at the present time in the enjoyment of good health. Her father's uncle died of "consumption," but there is no nearer history of phthisis. There is a distinct history of gout in the family. There is no history of diabetes.

I found the patient in the following condition. She is

a tall, slender, but well-proportioned woman, with a fair complexion, and looks decidedly anæmic. The left breast is greatly enlarged, and the nipple, from which milk frequently trickles, looks red, swollen, and flabby. This swollen condition of the latter may be partly accounted for by the suction action of the shield which she wears to prevent the clothes from being soiled. From a little above a line drawn transversely across the centre of the mamma, and extending to the right for some inches beyond the middle line, the whole of the surface downwards over the abdomen as far as the pubes is covered with eczema. For a distance of three inches around the nipple the surface is red and weeping, the minute points of the eczema being visible, and the whole is exquisitely sensitive, so much so that movement of the shield or clothes is a source of great pain and inconvenience. Below this area the surface is covered with ordinary scaly eczema. Some eczematous spots are scattered over the thighs, as far as the knees, which made their appearance after the abdominal eczema. The cause of this skin trouble is evidently the continuous flow of milk, which sometimes trickles slowly away, sometimes comes in jets. Until very recently her clothes have been saturated in spite of many folds of a napkin around the breast, and the skin consequently has been kept in a moistened condition. Lately, however, she has used a circular hollow shield, from the lower part of which a piece of thin tubing runs to a receptacle of india rubber which she wears below the waist, so that her comfort is no longer interfered with.

Menstruation has not reappeared since the birth of the child; she does not consider herself pregnant. There is no vaginal discharge. The urine has a specific gravity of 1020, has no deposit, is acid, and contains no albumen, sugar, or bile. Microscopically it is not found to contain anything abnormal.

Her appetite is poor; the tongue is large, flabby, and pallid, and the gums are markedly anæmic. The bowels

are somewhat costive but fairly regular. There is nothing else worthy of note concerning the digestive system.

Nothing abnormal is discoverable in either the chest or abdomen.

Her general condition does not seem good; she is easily fatigued and is not capable of much exertion of any kind. She does not take much interest in things which formerly gave her pleasure, and she considers that she is getting thinner and weaker. She frequently now suffers from headache, palpitation, and shortness of breath; she does not sleep well, and states that she is more nervous than she has ever been before. The pupils are natural, equal, and act perfectly to light; she has slight hypermetropia and astigmatism.

On examining a sample of milk which was sent to me soon after first seeing her, it was found to be, as regards colour, specific gravity (1030), and microscopical characters, perfectly natural. On several subsequent occasions when it was examined the results were always similar to the above.

As treatment, I ordered the patient to take good, nourishing, easily digestible food, to avoid sweets of all kinds; to have the breast comfortably supported by a handkerchief; and for the dry eczema some simple zinc ointment with vaseline; for the weeping surface a powder composed of zinc oxide and starch. Internally, five minims of solution of arsenic, combined with tincture of the perchloride of iron, solution of strychnia and infusion of calumba. In addition she was enjoined to have plenty of fresh air without fatigue, by carriage exercise. I desired that an accurate measurement of the amount of milk secreted each day might be kept; and I may here say that throughout her treatment she was most anxious to do everything that she was advised, and I believe that she carefully carried out my instructions in every detail.

November 9th.—She says that she feels much better; the eczema is healed with the exception of the part immediately covered by the shield, and for a distance of

about half an inch beyond, which is still raw and weeping. There are some patches of dry eczema on the arms and legs; for these an ointment composed of the yellow oxide of mercury and vaseline was ordered. The amount of milk collected in every twenty-four hours averages twenty ounces.

Five days later the milk was more abundant, averaging a pint and a half in the twenty-four hours. The previous medicine was stopped, and she was placed upon iodide of potassium in doses of five grains with aromatic spirit of ammonia thrice daily. She was also advised to abstain from liquids as much as possible. The iodide of potassium was afterwards increased to ten grains for a dose; but there was not the least benefit derived from it, although it was steadily continued up to November 27th, when, finding that there was no change, I ordered tincture of belladonna in ten-minim doses combined with half a grain of quinine every four hours. Two days later the milk was slightly less in amount. Occasionally the dose had to be omitted on account of dryness of the throat, slight difficulty in swallowing, with dilated pupils and impaired accommodation. Although at first it seemed as if the belladonna would be successful, it soon became evident that no benefit was being derived from its use. The quinine was omitted and the belladonna tried alone, but with a like result; the amount of milk only varied by three or four drachms above and below twenty ounces, at which it remained, for the increased quantity above mentioned was but temporary.

Iodide of potassium, combined with citrate of iron and ammonium, was given for nearly a fortnight, after which time belladonna was again resorted to; but no change in the amount of milk followed.

On December 22nd I ordered bromide of potassium, in doses of ten grains, thrice daily, and this was continued steadily until January 13th of the present year, on which day I again saw her. She stated that she felt much better and stronger, but the amount of milk remained the

same. I now determined to try mechanical treatment, and accordingly on that day, at 12.30 p.m., the nipple was turned up and compressed by plaster so that the milk was hindered from flowing. Within a very short time she felt discomfort in the breast, and towards evening was in considerable pain. At 9.30 p.m. she had a rigor, became feverish, and soon afterwards noticed that the breast, which had already become much larger than usual, was knotty in several parts. She endeavoured to keep up the pressure for some time longer, but on the following day, when I saw her, she said that the pain was so intense that she could not bear it, and about 10.45 p.m. she had the strapping removed. She stated that then the breast was greatly distended and the veins looked as if they would burst. When the milk once more flowed she thought that it had a disagreeable odour. At the time of my examination the breast had not resumed its former dimensions but looked considerably swollen, with the veins well marked over the surface. In order to avoid all possibility of error, a thorough examination was now made to see if there were any cause connected with the uterus which might be indirectly keeping up the flow. No sign of pregnancy was to be detected; the uterus was in its natural situation, of normal size, and freely moveable; there was nothing abnormal to be discovered.

I now ordered one grain of powdered opium, in the form of a pill, to be taken every six hours. The average amount of milk for some time past had been twenty ounces and a half. The opium was commenced on January 14th, with the direction that no change whatever was to be made in her mode of living. The following morning the measurement was one pint, and for the next three days the variation was only half an ounce more or less than the usual quantity. On the night of the 14th she was very restless and had unpleasant dreams. On the 15th she had no appetite and vomited twice; the next day she again vomited, could take no food with the least appetite,

and felt languid and sleepy all day. Towards evening the sleepiness increased so much that she could not take the pill at the regular time. She now suffered from headache, which was more or less constant. The night was a restless one and much disturbed by dreams. The following morning, at 7.30, she took the last pill; during the whole of the day she felt sick, and her appetite was completely gone. Finding herself so wretched, and seeing that there was not the slightest decrease in the amount of milk, she would take no more opium. During the time she was using this drug she was troubled greatly from constipation, and when I saw her on the 18th of January the tongue was thickly coated with a white fur, and she complained of severe headache; the pulse was 60 to the minute, and feeble.

As she was most anxious that something further should be done, I suggested that on the following day galvanism should be tried, and to this she readily assented.

On January 19th, the day on which galvanism was commenced, the measurement of milk was twenty-two ounces. The positive pole was placed on the spinal column in the cervical region, and the negative pole was slowly moved over the breast from the periphery to the centre, and then gradually around the circumference of the gland; this was continued for ten minutes, the current having a strength of five milliampères. The battery used was one of Coxeter's, consisting of modified Leclanché elements. During this application the patient stated that there was no difference to be noted in the amount of milk which flowed away. For the first twenty-four hours following the galvanism the quantity was one pint. The next application was continued for fifteen minutes, ten minutes being taken up with the same manner of applying it as before, and the remaining five by the application of both poles to the breast directly, each pole being slowly moved round the gland so that every portion of it was brought under the influence of the continuous current.

On January 30th it is noted that the average amount

of milk has been twenty-two ounces. She considers that there is no appreciable difference in the amount of milk at any special time of the day; it remains much the same—usually half a pint coming during the night and the rest by day.

On February 1st the constant current was used for fifteen minutes in the same manner as before, and followed by faradism for five minutes directly to the mamma. It is noted that during to-day's application the milk flowed freely, more freely than it has done before during the galvanism, but that during the faradism no milk flowed. Instead of any diminution in the amount of milk during the succeeding twenty-four hours it was found to be slightly increased. On the following day, February 3rd, the current was somewhat increased in strength and employed for ten minutes from the spine to the breast, and for ten minutes directly to the gland. Afterwards the current from the primary coil of the faradic battery was used for five minutes, followed by the current from the secondary coil for the same time.

Three days later it was stated that the amount each day had been twenty-six ounces, and now only the faradic current was employed for twenty minutes—fifteen minutes of the primary current and five minutes of the secondary—directly to the gland. During the application of both the milk flowed more freely than usual. By February 9th there was not the slightest diminution in the amount of milk, and as I considered that so many remedies had been fairly tried, and that all my instructions had been carefully carried out without any benefit accruing, I suggested that we should have the advantage of Dr. Matthews Duncan's opinion. Accordingly, the next day he saw her; he discovered nothing abnormal from a vaginal examination, and could find no cause for the continuous flow of milk. He suggested sulphate of quinine in doses of five grains three times a day, the bowels to be kept open by salines, and dry diet, *i.e.* as little liquid as possible.

The quinine I afterwards heard was taken in the doses

prescribed for three days, at the end of which time she could take it no longer, on account of persistent headache and singing in the ears. After leaving it off for a day she resumed it in half the dose, and continued to take this quantity, sometimes more and sometimes less, twice or thrice daily for a month. During this time the amount of milk was carefully measured each day, but it was found to be equal to the usual average—merely varying one or two ounces above or below it. During the time she was taking the quinine she did not consider that her appetite was good, and she frequently suffered from headache. The other instructions concerning the salines and diet were also carried out.

I did not again see her, after the large doses of quinine had been advised, for nearly three months (May 8th), when she gave me the following account:—Soon after ceasing to take the quinine the amount of milk began to slightly diminish, and was markedly less for a few days before March 23rd, on which day menstruation occurred for the first time since the birth of her last child. It was more profuse than she had ever experienced before. For the first two or three days she was entirely, and for the remainder of the time, five or six days, more or less, at rest. Whilst the menstrual flow lasted she observed that there was no great difference in the amount of milk, although there was a slight diminution. As soon as the period was passed the quantity of milk began to diminish at the rate of about one ounce each day; this gradual diminution lasted for six or seven days. Then there was a diminution of half an ounce daily for about a fortnight.

Next, the amount became gradually less by a teaspoonful each day, afterwards by about half a teaspoonful, until the quantity was reduced to two-and-a-half ounces in the twenty-four hours. It remained at this measurement for some days until the next period, which commenced on April 25th, and lasted for seven days. The loss was not so great as on the last occasion, but the amount was

greatly in excess of what she was accustomed to. During this period the quantity of milk fell to one ounce and a half, and remained at this average for some days. She once more tried abstention from liquid and careful dieting, which, however, led to no difference in the amount of milk.

In the beginning of May she observed one evening that although the shield had become displaced the linen over the breast was quite dry. For the next day or two only a few drops oozed out, and finally nothing came. Since then she has not been troubled at all. At the date of my last examination the part surrounding the nipple, for a distance of an inch and a half, was still eczematous from the effects of the shield, but it was drying up. The mamma was small and flaccid like the other gland. Her general condition was much improved; there was no longer any appearance of anæmia, and she stated that she felt stronger, could walk without fatigue, and had a good appetite.

The foregoing case is of much interest from several points of view. In the first place it will be observed that the galactorrhœa was unilateral; there was no flow of milk from the other breast. Secondly, there was no stimulus from nursing or from the genital organs, as far as could be discovered, to cause the continuance of the milk. Thirdly, the cessation of the flow of milk occurred on the appearance of menstruation. Fourthly, a large number of remedies were employed, but were of no avail in checking the loss; and, lastly, the character of the milk was perfectly natural. It may at once be said of the milk that it was excellent in every respect. Although I repeatedly examined it, as I have before remarked, and on each occasion microscopically, I never detected anything unusual. It was not of the watery consistence observed in many cases of galactorrhœa. Nor was the milk excessive in amount, as is met with in those cases of galactorrhœa where the milk is perfectly natural in quality although too abundant in quantity. The average

secreted during the latter months was a few ounces more or less than a pint. Sinéty ('Traité de Gynécologie') gives the average amount of a nursing woman in the twenty-four hours as 1300 to 1350 grammes (= 44 or 45 oz.). Meigs and Pepper ('Diseases of Children,' p. 312), from observations made by themselves, came to the conclusion that after the second month a healthy nurse gives from a pint and a half to a quart of milk each day. Other authorities give the average at about 44 oz. ('Dictionnaire de Médecine,' by Littré and Robin). So that when it is remembered that the flow was from one breast only it will be evident that the amount secreted was not excessive.

A superabundance of healthy milk is not unfrequently seen at the commencement of nursing until the glands seem to adapt themselves to their exact requirements, but no importance is attached to such a condition. In other cases which pass under the name of galactorrhœa the supply may be so copious that the flow starts from both breasts on the application of the child, and continues, not only whilst the infant is applied, but after it has ceased to suck, the milk being of a nutritious character. On the other hand, the class of cases frequently met with is that in which the milk flows in great abundance, sometimes almost continuously, but the greater portion of the fluid consists merely of water. Such cases when persistent and well marked are included under the name of "mammary diabetes," and there are many on record where large quantities of milky fluid have been lost each day for lengthened periods.

That the present case should have been unilateral is remarkable because there was secretion of milk in both breasts originally; but during the latter portion of the time that the baby was suckled, the left breast only was employed, for the milk from the other gradually ceased. In cases of ordinary galactorrhœa which have been placed on record, as far as I have been able to ascertain, milk has flowed from both breasts.

The fact that nothing acting as a stimulus to mammary secretion was discovered after a careful examination made both by Dr. Matthews Duncan and myself has already been referred to. When a direct stimulus to the mammary gland exists there is hardly any limit to the length of time during which lactation may continue, as is exemplified by wet-nurses who suckle two or more infants in succession.

Of a continuous flow of milk there are many instances on record. Dr. Robert Barnes mentions the case of a lady who, living with her husband, and menstruating regularly, nevertheless secreted milk continuously for five years after the birth of her only child, whom she suckled but for a short time ('Obstetric Medicine and Surgery'). Sinéty has recorded a case ('Compte Rendu des Séances de la Société de Biologie,' July, 1877, p. 343) of a woman who was confined for the third time, not having had a child for three years previously. The two first children had been suckled for a long time. After the last confinement she had ceased nursing for over a month, but eighteen months later, when under observation, there was an abundant milky flow from each breast. The milk was very thick, and much richer in fat than normal; it contained crystals of cholesterine. There was no sugar in the urine. The patient was pale, weak, and emaciated.

The most remarkable case bearing upon this point which I have been able to discover is that recorded by Dr. Horace Green, in the 'New York Journal of Medicine,' for 1844. It is that of a lady aged forty-seven, who had suffered from a copious and uninterrupted secretion of milk during a period of nearly thirty years, the latter nine years being of widowhood. Two of her grandchildren she suckled at different periods during the temporary illness of their mother. No evidence of a morbid condition of the uterus or of any of its appendages was present. At the end of two years after the birth of each of her children, four in number, the catamenia reappeared,

with the effect of producing an increased flow of milk for the time being. At the date of the case being recorded the lady was in good health.

In some instances where the mother has weaned the infant and attempted to get rid of her milk, the persistent secretion has been, perhaps, accounted for by enlargement of the uterus in commencing pregnancy.

Although nothing in the present instance was discovered pointing to any uterine irritation at all likely to keep up the flow reflexly, it is indeed remarkable that it was apparently changes in the uterus and appendages, connected with the return of menstruation, which caused the secretion of milk to be arrested. For, from the time these changes took place a few days before the 23rd of March, at which date the period returned, the flow lessened in amount, and finally ceased entirely after the occurrence of the next period a month later. It is also worthy of note that these two periods were excessive in amount in comparison with what she had been accustomed to. This behaviour might make one think of vicarious menstruation—a subject which would occupy too much time here to even touch upon. It seemed, in her case, as if the system could not stand the double strain of such loss, and, as usually occurs naturally in nursing women, when the menstrual flow was re-established the lacteal secretion became arrested. It may be observed that menstruation recurred for the first time exactly eleven months after the birth of the child. It is also frequently noticed that when menstruation recurs in nursing women earlier than the average time at which it is expected in most women, the lacteal secretion commences to diminish and is soon finally arrested. So far then the behaviour of the case under consideration towards the latter part of the time might be regarded as physiologically accounted for.

In the 'Bulletin Thérapeutique' for 1856 there is a report of a case of galactorrhœa by M. Pétrequin, of Lyons. The patient was twenty-six years of age, and suffered from a copious flow of milk after her second con-

finement. She had not suckled for a single day. After trying many remedies M. Pétrequin had recourse to vapour baths and diaphoretics, which he said caused the best results, for the milk lessened and menstruation returned slightly. The baths were continued for a month, followed by leeches to the vulva, morphia applications to the breasts, and opium internally. Six days after commencing the opium the flow had nearly ceased, and the following week menstruation appeared for the fourth time, but now in normal abundance, and the patient left the hospital cured. More credit is apparently given to the method of treatment than to the laws of physiology in getting the patient well.

Although it is known that any irritation of the uterus may keep up the secretion in galactorrhœa, and that pregnancy itself may be a cause of its continuance, it is worthy of note that the latter condition may also be a reason for its cessation. As an example of this I may quote the following:—Dr. Gueneau de Mussy mentions, in a paper on galactorrhœa in the 'Archives Générales de Médecine' for June, 1856, two cases which were under the care of Dr. Depaul. They were suffering from a flow of milk after confinement, accompanied by emaciation and loss of health, which resisted everything attempted in the way of drugs. But the milk in both was arrested immediately a fresh pregnancy occurred. Another remarkable instance of what, for want of a better name, is called the "sympathy" existing between the uterus and mammary glands is met with in those cases where milk appears in the glands at each menstrual period for some time after cessation of nursing (Sinéty, op. cit., p. 955).

It may here be observed that there was no reason to suppose that the milk-ducts were in any abnormal condition or suffered from want of power; for it is pointed out by Busch and Moser (Milchfluss, 'Handbuch der Geburtskunde,' p. 474) that such may be the cause in some cases of a continued "pouring out" of milk.

Regarding the treatment of this case, there are one or

two points deserving of notice. Before coming under my observation the patient had been subjected to somewhat active local treatment by belladonna, for she suffered from well-marked symptoms of poisoning by that drug; whilst I tried in succession iron and strychnine with arsenic, abstention from fluids as much as possible, iodide of potassium, belladonna pushed to its physiological effects, both with and without quinine, the latter being afterwards given in small and subsequently large doses, bromide of potassium, mechanical obstruction of the flow, opium, galvanism, and faradism. Her diet throughout had been carefully attended to, and wine, either claret or burgundy, which was usually taken by advice, was occasionally entirely given up, in the hope of some difference being made in the quantity of milk. But none of the foregoing drugs, as has been shown, had the slightest permanent good result.

I may as well at once state that all frictions with various oils and ointments, compression of the gland by sponge or strapping, lotions, and poultices, composed of various substances generally recommended, were out of the question; for it will be borne in mind that when the patient first came under observation she was troubled, in addition to her other discomfort, with severe eczema, and although latterly that was practically cured, the skin was much too sensitive to attempt any of the foregoing class of remedies.

Of the drugs employed I had expected some benefit from iodide of potassium, for it is recommended by all authors who mention the subject of galactorrhœa, and it has doubtless been extensively used. In the 'Gazette des Hôpitaux,' for 1858, M. Rousset, Professor of Clinical Midwifery at Bordeaux, speaks highly of its effects in diminishing milk when given in the non-puerperal condition, having tried it in twenty cases. He considered that its action was more decided in small doses (six to eight grains daily) than when given in larger quantities. He also states that the excessive secretion of milk may be prevented or moderated by administering it on the first

or second day after delivery. Belladonna, which usually appears so successful in attempts to arrest the secretion of milk, was most patiently tried; and perhaps there is no drug which is so extensively employed for a similar purpose, but, like the preceding, it was utterly useless in the case related. It is mentioned in the 'Journal des Progrès,' for 1829, where it is recorded that M. Ranque, chief physician at the Hôtel Dieu, Orleans, employed it in the form of extract combined with other substances, as a local application, with good results. Since then it has been widely used both internally and externally, more especially since 1856, when Dr. Goolden drew attention to its use in the 'Lancet' for that year, where he mentions two cases in which it was used.

I must here mention a remarkable method of treatment in cases of galactorrhœa. In the 'Monatschrift für Geburtskünde' (vol. xvi, p. 425) Dr. Abegg, of Danzig, after referring to examples of uterine contraction in consequence of excitement of the mammary nerves, draws attention to other cases showing the influence which stimulation of the uterine nerves may exert on those of the breast. In one case of galactorrhœa where the infant had to be removed from the breast, and in which none of the ordinary methods of treatment checked the excessive secretion, which continued to annoy the patient for weeks, a tepid uterine douche was employed for a quarter of an hour. After this slight bleeding from the uterus occurred and lasted for a fortnight. During this time the amount of milk gradually diminished and the breasts became smaller. Soon afterwards menstruation returned, and the woman, aided by the exhibition of iron, recovered. Another case was that of a woman prevented from nursing by sore nipples. For ten weeks after delivery the amount of milk remained excessive. The tepid douche was employed during a week, once daily for four days, and thrice daily afterwards. At the end of the week bleeding from the uterus occurred. The milk gradually lessened and regular menstruation returned. Although

I knew of this method of treatment from having made literary references whilst the patient was under observation; before the exhibition of quinine in large doses as advised by Dr. Matthews Duncan, I confess that, having failed in so many remedies, I did not feel inclined to propose it. It is, however, evidently a treatment well worth remembering in dealing with cases of galactorrhœa, for it is a practice clearly having some basis on physiological laws. The termination of the two cases quoted by Dr. Abegg is analogous to that of the subject of this paper, for the milk diminished and ceased entirely as soon as menstruation was re-established.

A noteworthy point in the treatment of my patient is that of the galvanism and faradism, for although I used both carefully, and gave each a fair trial, not the slightest good followed. It is also important to notice that the flow of milk was not materially increased by the faradism. This does not accord with the results obtained by Dr. Skinner, of Liverpool, who mentions eight cases in the fifth volume of the 'Transactions' of this Society, where he considers that the application of faradism was the means of increasing, or, in the case of a breast useless for some years owing to a mammary abscess, establishing the flow of milk. In most of his cases one or two applications of only a few minutes each sufficed. In the 'Union Médicale' for January 3rd, 1857, there is a report of a communication to the Société Médicale des Hôpitaux de Paris by M. Becquerel on the use of electricity in the suppression of the lacteal secretion. He states that his attention was called to its use by M. Aubert, who employed it in the case of a woman whose milk was suppressed whilst suffering from double pneumonia. The electricity was applied by the direct method on four occasions, each lasting twenty minutes, with a successful result. M. Becquerel's case was that of a woman, aged twenty-seven, of nervous temperament, who had suckled for six months, and who, owing to mental anxiety, was losing her milk, the left breast having nearly ceased to yield any, and the right

giving but a scanty amount. Three applications of the electrical current were made to the left breast by the direct method, each lasting a quarter of an hour. After the first application the secretion increased in amount, and was afterwards sufficiently abundant in both breasts, although no current was applied to the right side. The form of electricity employed was from a magneto-electric machine.

Some experiments made by Dr. Roehrig ('Virchow's Archiv,' vol. lxvii, S. 119) to determine whether the nervous or the vascular element has the greater influence over the secretion of milk, have an interesting bearing on the foregoing. Having arranged means for carefully collecting the amount of secretion he operated on curarised goats. It was found that the amount of milk secreted was greatly increased if the inferior branch of the external spermatic nerve (pudic), which supplies the principal blood-vessels of the part, was divided, but that it was arrested if the peripheral end were submitted to electrical stimulation. Therefore the vaso-motor influence of this nerve has the largest share in causing differences in the amount secreted, by altering the calibre of the vessels. It follows consequently that the amount of milk secreted is due rather to the state of the circulation in the gland than to the direct influence of the nervous system. According to Roehrig's experiments this was borne out by the administration of such drugs as strychnine, caffeine, and digitaline, which increased the blood pressure; and it was found that on giving them the secretion of milk was greatly augmented, notwithstanding the previous division of the nerves supplying the glands. But on administering drugs which lessened the blood pressure the amount of milk was diminished. Of these drugs the most striking results were produced by chloral hydrate, for after a temporary increase, lasting but a few minutes, the secretion was almost entirely suppressed for a whole day. The effects of atropine and bromide of potassium were less powerful. Dr. Roehrig made further experi-

ments to prove that the secretion of milk depended on the state of the circulation by raising or lowering the blood pressure, which was accomplished by stimulating the central and peripheral portions respectively of the pneumogastric nerve. The alterations caused in the pressure were registered by means of a kymograph. The tracings showed that the rise and fall in the blood pressure corresponded with the increase and diminution of the amount of milk secreted.

Sinéty (loc. cit., p. 931) has a passage which has reference to this part of the subject. He states that he has divided in the guinea-pig the large nervous trunk which supplies the mamma, and which is situated outside the accompanying vessels. Division of the nerve, practised either before or during lactation, has no appreciable influence on the secretion. The excitation of the same nerve by electric currents gave no further results. But he has proved that it contains fibres endowed with an excessive sensibility, a fact which he states has also been observed by Eckhard in the goat.

It is evident that the drugs which were administered in the case here recorded, whatever the active result may have been upon the circulation, had no influence on the secretion of milk. This is particularly interesting with reference to the belladonna and opium, for it is clear that both thoroughly affected the patient, and the circulation must consequently have been considerably lowered. Roehrig lays great stress on the action of chloral in reducing the amount of milk secreted by its effects of lowering blood pressure. But according to Garrod ('Materia Medica and Therapeutics,' p. 203) the action of opium is very similar, being a sedative to the vascular system, so that although no chloral was administered, a drug having a somewhat similar action produced no impression. Although such striking effects were produced experimentally on animals by Roehrig the foregoing case shows that such experimental results should not be too hastily extended to the human organism.

The subject of this paper illustrates in a remarkable degree the occasional impotence of drugs as therapeutic agents, and at the same time is an example of the perfect laws of physiology; for notwithstanding all the treatment adopted the flow of milk continued until such time as the internal economy was ready to arrest it by a uterine metastasis.

In conclusion I may say that, although I have searched the records of not only this but all our sister societies, as well as all literature likely to bear on the subject, I have failed to find any case similar to the one related, and therefore have the honour of bringing it before this Society.

Mr. DORAN moved that the discussion on Dr. Gibbons's paper be adjourned till the next meeting of the Society. This was seconded by Dr. MATTHEWS DUNCAN, and carried.

ANNUAL MEETING.

The audited balance-sheet of the Treasurer, Dr. Galabin, was read.

BALANCE-SHEET OF THE OBSTETRICAL SOCIETY OF LONDON.

(Abstract of the Receipts and Expenditure for the year ending December 31st, 1886.)

1886. RECEIPTS.	£	s.	d.
To balance from 1885	439	0	4
(1) 652 ANNUAL SUBSCRIPTIONS at £1 1s., realising	684	11	3
(2) 3 COMPOSITION FEES at £10 10s.	31	10	0
(3) MIDWIFERY EXAMINATION FEES	89	10	0
(4) SALE OF 'TRANSACTIONS' and 'RULES FOR INFANT MANAGEMENT' (Longmans) 79 13 8			
Do. do. (Society) 17 16 0	97	9	8
(5) INTEREST on Consols	40	12	0
Amount of Stock, 3 per Cent. Consols, standing in the names of the Trustees £1500 0 0			
	£1382	13	3

1886. EXPENDITURE.				£	s.	d.
By (1) 'TRANSACTIONS,' VOL. XXVII, Printing, Lithography, Paper, Binding, Index, and delivery of Volume				481	12	0
(2) LIBRARY:						
Books Purchased and Binding				51	15	5
(3) MUSEUM AND LIBRARY:						
Rent	£100	0	0			
Librarian, Salary and Commission	147	16	4			
Repairs to Furniture, Cleaning, Coals, Gas, &c.	27	6	7			
Petty Disbursements	2	2	5	277	5	4
(4) GENERAL MEETINGS AND OTHER EXPENSES:						
Rent of Meeting-room	£42	0	0			
Expenses of Meetings	24	2	0			
Stationery and Postage	40	4	8	106	6	8
(5) EXAMINATION OF MIDWIVES:						
Expenses				2	17	6
(6) EXTRAORDINARY EXPENSES:						
Legal Charges, re 54, Berners Street				8	7	0
(7) BANKING EXPENSES:						
Commission, Stamps, Cheque-book, &c.				0	15	4
PURCHASE OF CONSOLS, £100				100	10	0
Balance at Bank				353	4	0
				£1382	13	3

Audited and found correct, JOHN PHILLIPS, FREDK. B. WHITE, WILLIAM GANDY, *Auditors.*

PERCY BOULTON, *Hon. Secretary.*
January 29th, 1887.

It was proposed by Mr. DORAN, seconded by Dr. CLAPHAM, and carried unanimously, "That the audited report of the Treasurer, just read, be received, adopted, and printed in the next volume of the 'Transactions.'"

The report of the Honorary Librarian (Mr. Alban Doran) was then read.

Report of the Honorary Librarian for 1886.

"I have to report that the condition of the Library during 1886 was satisfactory both in respect to the number of readers who availed themselves of its resources, and to the new volumes added to its shelves.

"The additions made to the Library in 1886 include 34 books and 16 pamphlets received as donations, and 55 books and 13 pamphlets which were purchased; to these must be added 65 periodicals. Reckoning the two sets of pamphlets as forming 2 volumes, the total of additions will be 156. As the Library consisted, at the end of the year 1885, of 3534 volumes, the additions during 1886 increase the collection to 3690 volumes.

"Owing to the steady yearly increase of the Library, it has been found necessary to arrange for an increase in the number of shelves. A small room adjacent to the Library will be utilised for this purpose.

"ALBAN DORAN."

It was moved by Dr. HERMAN, and seconded by Mr. KEELE, and carried *nem. con.*, "That the report of the Honorary Librarian be received, adopted, and printed in the 'Transactions.'"

The report of the Chairman of the Board for the Examination of Midwives was then read.

Report of the Chairman of the Board for the Examination of Midwives.

"During the past year the number of candidates who presented themselves at the examination of the Society was 102. Of these 80 showed a sufficient knowledge of Midwifery to satisfy the Examiners, and obtain the diploma of the Society.

"It is satisfactory to report that the efforts of the Society are becoming more widely known and better appreciated, as is manifest from the rapid increase in the number of candidates (almost one fourth the number of Midwives on the register being added to it during this year), and by the fact that a fair number of them come from the country.

"It is moreover worthy of note that the candidates are on the whole better educated, and that a larger proportion of educated women appear among them.

"JOHN WILLIAMS, M.D.,
Chairman."

Dr. PLAYFAIR had much pleasure in moving the adoption of the report of the Midwifery Board. Nothing could be more satisfactory than the steady progress of the Society's examination, and it proved how urgent was the need which had induced the Society to take the step of instituting such an examination. The Society really should not have had to do this. It was no business of theirs, but the clear duty of the Government. Unfortunately the various Governments placed over us, whether Liberal or Conservative, had had so much to do in the past that they had no time to consider such matters as the life and welfare of the thousands of women who suffered from the culpable ignorance of the uneducated women who assumed to themselves the name and faculties of midwives; nor did it seem likely that they would find time in the future. There was no part of the work of the Society for which posterity would be more grateful to

it than this, and the advantages accruing from it would certainly sooner or later force the Government to undertake the plain duty which they should have long since fulfilled.

Dr. MALINS seconded the resolution with the greater readiness since he thought that the majority of the Fellows were unaware of the amount of good which was being done in this department. In the interest of the profession it was an important work, while the advantage to the community would become marked and permanent. The number of applicants for examination showed how much it was valued, and though it entailed a considerable amount of work and close attention it was not without financial results to the Society. To the energy and ability of Dr. Williams they were highly indebted for this very satisfactory and successful report.

It was proposed by Dr. PLAYFAIR, seconded by Dr. MALINS, and carried unanimously, "That the report of the Chairman of the Board for the Examination of Midwives be received, adopted, and printed in the 'Transactions,' and that the cordial thanks of the meeting be given to Dr. John Williams."

The following alteration in the Laws was proposed for adoption by Dr. JOHN WILLIAMS, seconded by Dr. WATT BLACK, and carried :—

Cap. XVII., Sec. 1. To omit the words within brackets and in small type.

CHAPTER XVII.

OF THE ORDINARY MEETINGS.

1. The Ordinary Meeting of the Society shall be held on the [second Wednesday in January and the] first Wednesday in every [other] month, the months of August and September excepted, at eight o'clock p.m. precisely; but the Council shall have authority to alter the day of meeting of the Society from the first Wednesday in the month to a subsequent day, when the first Wednesday may for some special reason be inconvenient.

The Scrutineers of the ballot then presented their report, and the President announced that the following had been duly elected as officers and Council for the ensuing year:—

Honorary President.—Arthur Farre, M.D., F.R.S.

President.—John Williams, M.D.

Vice-Presidents.—Peter Lodwick Burchell, M.B; William Frederick Cleveland, M.D.; Robert Cory, M.D.; Charles James Cullingworth, M.D. (Manchester); George Ernest Herman, M.B.; William Stephenson, M.D. (Aberdeen).

Treasurer.—Alfred Lewis Galabin, M.A., M.D.

Chairman of the Board for the Examination of Midwives.—James Watt Black, M.D.

Honorary Secretaries.—Francis Henry Champneys, M.A., M.B.; Percy Boulton, M.D.

Honorary Librarian.—Alban Doran, F.R.C.S.

Other Members of Council.—Frank Argles; Rayner W. Batten, M.D. (Gloucester); Edward Burd, M.D. (Shrewsbury); J. Matthews Duncan, M.D., F.R.S.; Arthur Guy Elkington (Surgeon-Major); Walter S. A. Griffith, M.B.; Peter Horrocks, M.D.; Jamieson Boyd Hurry, M.D. (Reading); Robert Nichols Ingle, M.D. (Cambridge); Evan Jones (Aberdare); Montagu Handfield Jones, M.B.; Arthur H. N. Lewers, M.D.; George Lowe, F.R.C.S. (Burton-on-Trent); William Appleton Meredith, M.B., C.M.; John Phillips, B.A., M.B.; Arthur Roper; Amand J. Mc C. Routh, M.D.; Edward W. Tait.

The PRESIDENT then delivered the Annual Address.

ANNUAL ADDRESS.

GENTLEMEN,—I have again to congratulate the Society on its prosperous and healthy condition. Our numbers at the close of the year were 736. We have lost by death, resignation, and erasure, 40 Fellows, but during the year we elected the large number of 72. Including the 25 new members that have been already elected this year, the Society at the present time stands with a total of 761, the highest number that has been reached since its foundation. Our financial position is good. As you have heard from the report of our excellent Treasurer, another £100 has been added to our invested funds, making the amount of our capital £1500, and we commence the year with a good balance at our bankers. Our Library has been increased by the addition of 156 volumes, bringing up the total to 3690. These are all proofs of our popularity and prosperity, but the success of the Society depends more upon the work done, and we can show continued good results in this. Our Midwifery Board reports good and still increasing work. The number of women examined reached the large number of 102, of whom 80 were found qualified to receive the Society's diploma; 395 women are now on our register.

This gratuitous and honourable work, as was stated last year, causes considerable strain on the Society and its unpaid Examiners, and as the numbers are continually increasing some scheme will have to be devised to meet the difficulty. It is curious to notice how the value of the Society's diploma has increased, when we observe that, whereas in the first eight years only 47 names appear, during last year 102 women presented themselves for examination. The unsettled state of politics still pre-

vents this burning question from coming to the front, as sooner or later it must do; but the Society, if it had no other work to show, might well be proud of having taken in hand this duty so long neglected by the State. The attendance at our meetings has been good, and the work of the Session well maintained. The publication of the 'Transactions' in portions has been undertaken for the first time, and although the circulation has not been large, it has been a boon to those who have availed themselves of it, and an advantage to the Society in bringing its work more rapidly before the notice of the profession.

[Dr. Potter then entered into an enumeration of the more remarkable of the specimens shown, and of the chief papers read at the meetings of the Society during the past Session.]

I have attempted no more than a slight summary of the work of the Society during the year, and the quality of the papers is an evidence that its scientific standard has been well maintained, and that it has fulfilled its function as established for the promotion of knowledge in all that relates to obstetrics, and the diseases of women and children. It may be contended by some that we have not the records to show of great improvements in the practice of our art during the past year,—no striking novelties in treatment; but it is the function of the Society to maintain a judicial attitude, and, while assisting progress when the progress is real, to check or arrest this when it tends to danger. In other words, it welcomes improvement, but avoids destruction. One of the highest points that we should aim at is the prevention of disease, and this, though well worked out in the practice of obstetrics, has not received the same attention in the diseases of women. Much has been done at different times to solve the important question, Should any death occur in or after natural labour? and the answer to this question has been each year more favourable, as evidenced by the improved record of our lying-in hospitals. Even in difficult labour mortality has been much reduced, and though

the wish expressed by Dr. Tyler Smith, in his paper in the first volume of our 'Transactions' for the abolition of craniotomy from obstetric practice in all cases where the fœtus is living and viable, has not yet been fully realised, the more frequent induction of premature labour and more timely use of the forceps have conduced much in this direction. In our present state of knowledge we are not yet prepared to accept abdominal section as its alternative in all cases, still holding to the English axiom, the safety of the mother before that of the child. Again, by the use of chloroform and the more frequent application of the forceps, we have means of preventing laceration and sloughing of the soft parts, thus rendering far less common the miserable after-effects of a lingering labour. But the prevention of the diseases of women has not received the same attention; the effects of cold, damp, climate, occupation, imprudence, and want of care at the menstrual periods, the effect of excessive child-bearing, abortions, the prevention of impregnation, and many other causes of disease, deserve and require our careful consideration; and he who can prevent the occurrence of the diseases of women will be a greater benefactor to his race than the operator, however skilful he may be, who treats them.

The whole question of uterine pathology is far too large a one to enter into here, even had we the requisite time at our disposal. To attempt to enter into the various theories that have from time to time given rise to different modes of treatment would be a perplexing and unprofitable task. Each seems to reign for a short time only to be cast aside and replaced by some other, and now the tendency seems to grow more and more surgical, until at last to some minds abdominal section, and the removal of internal organs, seems the panacea for all the evils that woman is heir to. To the indiscriminate use of these procedures we cannot give our adhesion, and especially do we object to the heroic surgical treatment of hysteria, that chameleon disease

which still claims so much sympathy and treatment at our hands. Even statistics on these matters, however carefully tabulated, have to be received with caution; the distinction between cases that have recovered, or become well, and those that can be truly said to have only just escaped death, or have lived too frequently with their suffering unrelieved, has not always been clearly shown. In estimating these matters much must depend on character. A reputation for truth and logical precision is of more permanent value here than the statement of brilliant results that will not bear the test of investigation. If I have spoken strongly on this matter, it is owing to the fear that some may be apt to forget the sacredness of human life in their zeal for operating, and this must be my excuse.

One task yet remains to me, and that a sad one. We have always to delpore the loss of some of our members by death. This year fortunately the number has not been so great as on many occasions. Eight have passed away: two of our Honorary Fellows, viz. Dr. A. E. Simon Thomas, of Leyden, and Dr. Courty, of Montpellier; and six of our Ordinary Fellows. Of the former, Dr. A. E. Simon Thomas, of Leyden, whose death was announced so recently as December last, we have not yet been able to find any obituary notice. He was elected an Honorary Fellow of the Society in 1866. Many of his works are in our Library, one of the most important being his great work on the 'Oblique Pelvis.' For the following notice of M. Courty I am indebted to the memoir published in the 'Annales de Gynécologie,' of which journal he was one of the original founders:

"Professor Amedée Courty was born at Montpellier on November 2nd, 1819, his father and grandfather having also followed the profession of medicine. After receiving the usual classical education he threw himself with zeal into the study of medicine, and at the same time devoted himself to the pursuit of science. After taking a license in science he became Doctor of Medicine in

1845, the subject of his graduation thesis being 'Sur le Developpement de l'Œuf dans l'Espèce Humaine.' He now gave himself up to the study of physiology, and published several memoirs on this subject, also teaching the subjects of anatomy and surgery until his appointment as a Professor in the Faculty of Medicine in Montpellier in 1849, when he wrote a thesis on the 'Use of Anæsthetics in Surgery.' In 1854 he wrote a memoir on 'Cauterisation of the Cervix Uteri with the Actual Cautery during Pregnancy.' From this time he devoted himself to the special study of the diseases of the genital apparatus in women, and, dissatisfied with the knowledge that he found in the text-books of his time, began to collect materials for the great work, on which rests his title to fame, named 'Traité pratique des Maladies de l'Uterus et de ses Annexes,' the first edition appearing in 1866, followed by a second and third in 1873 and 1879. This work was translated into English in 1882, with a preface by Dr. Matthews Duncan. Though no doubt largely indebted to the works of German and English authors, still throughout we find the impress of his own mind, and the result of his long and patient researches. The great secret of Courty's success in his department of practice was that he became a specialist only after long study, and with a familiarity with medical and surgical work of many years. On this foundation he grafted his special studies, this being the way in which he understood the term speciality, not following, as is too often the case in the present day, the plan of calling himself a specialist, and therefore considering himself one, such a specialist as might be defined as one knowing a very little of one subject, and nothing at all of the science and art of medicine. He obtained a large practice in Montpellier, and was largely consulted throughout the South of France. His professorial duties obliged him during his later years to pay frequent visits to Paris, and advantage was taken of his presence by many to avail themselves of his matured knowledge and skill." He took great interest in the French Association

for the Advancement of Science, and also in the International Medical Congress. He was a regular attendant and frequent speaker at these meetings. He died on March 2nd at Montpellier. His loss is felt by all the medical world, and especially that part of it devoted to the study of the diseases of women. He was elected an Honorary Fellow of this Society in 1875.

Of our ordinary Fellows, John Archer, F.R.C.S., practised in Birmingham, his native town, upwards of fifty years, and was one of the early Fellows of this Society, having been elected in 1859. He was senior surgeon to the Lying-in Hospital, and was an able obstetrician. He was a good type of the general practitioner, honourable, hardworking, and successful; a past president of the Birmingham Medical Institution, he held a most respected professional position in the town. He died on March 8th, at the age of seventy-seven, of angina pectoris.

In speaking of the lamented death of Dr. Alfred Wiltshire, which occurred on the 4th of December, at a comparatively early age, I refer to a loss which is specially felt in our Society; he was a regular attendant at our meetings, and one who had taken an important part in its management. Born at Gloucester in 1839, he commenced his medical education at University College in 1859, and I can speak of him as a fellow-student of my own, as we commenced our anatomical work on the same day. He was a zealous and industrious student, and after going through the usual curriculum, he took the M.D. of St. Andrews in 1862, and the following year the license of the Royal College of Physicians. He then for a time practised in the Hampstead Road. After a time he gave up ordinary practice on his appointment as one of the inspectors of vaccination to the Privy Council. After holding this post for some years he resigned it in order to return to London and enter into consulting practice. Hence we find him in 1868 taking the membership of the College of Physicians, and settling in a house in Wimpole Street.

He joined our Society in 1866, and filled the office of Librarian in 1871, giving this up when appointed Secretary in 1874, and Vice-President in 1877. During this time he made some valuable contributions to the 'Transactions' of the Society. Amongst others his paper on tetanus after abortion is an especially striking one, and is to be found in the ninth volume of our 'Transactions.' He also made remarks on some of the conditions observed in newborn children, specially in connection with the colour of their eyes. The work that he did in connection with the Infant Mortality Committee and the preparation of its report must not be forgotten. This, it may be remembered, had a very important bearing on the subject of so-called baby-farming, and contributed in no small degree to the prosecution and punishment of some of the principal offenders. Until the time of his illness he was a regular attendant and frequent speaker at the ordinary meetings of the Society. His boldness in operating on an ovarian cyst during acute peritonitis will always remain a striking example of originality and diagnostic skill. The case is recorded in the 'Pathological Transactions.' Dr. Wiltshire was attached to St. Mary's Hospital, where he was obstetric physician and joint lecturer on obstetrics. He was also physician for diseases of women to the West London Hospital, and physician to the British Lying-in Hospital. About four years ago his health began to give way and he had symptoms of locomotor ataxy. His sanguine temperament, however, led him to think less seriously of his condition than did his colleagues and friends, and it will be in the remembrance of many here, that on his health improving he came to one of our meetings and expressed his thankfulness that the forebodings of others had not been correct in his case, and that he hoped to be shortly quite restored to health. It was during this temporary remission that he published some lectures on the comparative physiology of menstruation. This improvement, however, did not last long, and with the rapid progress of the disease, body and

mind at length gave way. In the summer of 1885 he resigned all his public appointments, and gave up any hope of returning to practice. To good personal appearance and pleasing address, he added a confident manner, which attracted and secured the confidence of his patients, and had his life been spared he would have been a successful and scientific physician. Cut off prematurely he has still left a permanent mark in obstetric medicine.

Dr. J. Macgrigor Croft, of Abbey Road, practised for many years in St. John's Wood, and died January 1st. He was elected a Fellow of the Society in 1859.

John M. Burton, F.R.C.S., of Lee, died on February 10th. He was a well-known and respected practitioner in that neighbourhood where he had passed the whole of his long and industrious life. He became a Fellow of the Society in 1862.

Henry Albert Lovett, M.R.C.S., of Tasmania, died in July, 1885, but his death was only reported to us in 1886. He entered the Society in 1876.

John Gittins, L.R.C.P.Ed., of Horselydown, was elected in 1867, and died on July 27th, aged forty-five.

Whilst closing these brief and imperfect records of our departed friends, I cannot but feel how often it has been scanty and insufficient, but this has been due, not to a want of respect and appreciation on our part, but to the absence of knowledge and details at our disposal. It may perhaps be said of them as of many other silent workers—

> "The noblest service comes from nameless hands,
> And the best servant does his work unseen."

It remains to me, before leaving this chair, to which I was elected by your kindness two years ago, while apologising to you for my many shortcomings, to thank you for your patient consideration and courtesy to me on all occasions; and especially must I thank our Secretaries for the help and assistance they have accorded to me at all times. The work of our Secretaries, often laborious

and self-denying, is known to few, and I can only say that as long as the Society is served by such officers as Drs. Herman and Champneys we need have no fear either for its future prosperity or the promotion of obstetric science.

Of my successor whom you have to-night unanimously elected, Dr. John Williams, I need say but little—his name is a household word in the Society. Beyond his other and many qualifications I know of no one who has its interests more thoroughly at heart, and I can only congratulate the Society on the wisdom of its choice.

It was moved by Dr. MATTHEWS DUNCAN, seconded by Dr. CLEVELAND, and carried with applause, "That the best thanks of the Society be given to the retiring President, Dr. Potter, for the efficient manner in which he has presided over the meetings of the Society during his term of office, and that he be requested to allow his interesting address to be printed in the next volume of the 'Transactions.'"

Dr. MATTHEWS DUNCAN had great pleasure in proposing a vote of thanks to the President for his address, and that he be requested to permit its being published in the 'Transactions' of the Society. It was a comparatively easy and a gay and cheerful matter for the President to give a retrospect of the year's proceedings when he could not but adopt a triumphant tone all through it, the Society being in all its departments remarkably prosperous and successful; and he was sure the Fellows had all had much pleasure in his eloquent oration. Dr. Potter had held the chair for two years, and had conducted their meetings in all respects admirably. He expressed the mind of the Society when he asserted that they had never had a better Chairman.

Dr. CLEVELAND, while regretting that, from his absence at some of the meetings, he could not speak as fully to the point as he could have wished, endorsed the remarks

of Dr. Matthews Duncan as to the efficient conduct of Dr. Potter in the chair during his term of office. Indeed, he thought the retiring President might be fairly taken as a model by future candidates for that distinguished post. He felt sure that Dr. Potter's interesting address, when printed, would be read with profit. He cordially seconded the resolution, and, having put it to the meeting, it was carried by acclamation.

A vote of thanks to the retiring Vice-Presidents and to the retiring members of Council was proposed by Mr. E. W. TAIT, seconded by Dr. DAVSON, and carried unanimously.

Mr. TAIT said,—"I have pleasure in moving the following resolution:—'That this meeting expresses its best thanks to the retiring Vice-Presidents—Dr. J. Watt Black, Dr. W. H. Day, and Dr. Malins—and to the other retiring members of Council—Dr. William Duncan, Dr. Gibbings, Dr. John T. Griffith, Mr. Hallowes, Dr. Aust Lawrence, and Mr. Hopkins Walters.' I need not remind the Fellows of the important functions in the organisation of the Society which the Vice-Presidents may at any time be called upon to exercise, or of how essential to its welfare their efficiency may be, nor need I point out that the proper conduct of the Society's business must depend upon the efficient fulfilment of their duties by the members of Council, and that these gentlemen, therefore, have deserved our best thanks."

Dr. S. HOUSTON DAVSON said, "It affords me much pleasure to second the vote of thanks proposed to the retiring Vice-Presidents and retiring members of Council, and I am sure the Society will agree with me that those gentlemen have always discharged their duties to the Society most cheerfully and faithfully when called upon to do so."

MARCH 2ND, 1887.

JOHN WILLIAMS, M.D., President, in the Chair.

Present—58 Fellows and 6 Visitors.

Books were presented by Dr. Walter Griffith, Dr. A. Martin, Sir T. Spencer Wells, Bart., the St. Bartholomew's Hospital Staff, and the Council of University College.

Leonard P. Mark, L.R.C.P.Lond.; and G. F. Cowie Jackson, F.R.C.P.Ed., were admitted Fellows of the Society.

Charles Walter Biden, L.R.C.P.Lond. (Helmsley), was declared admitted.

The following gentlemen were elected Fellows of the Society:—George Mallack Bluett, L.R.C.P.Lond.; Charles J. O. Hastings, L.R.C.P. (Toronto); Thomas Grant Langhorne, M.R.C.S.; and Albert Rosenau, L.R.C.P. Lond. (Kissingen).

The following gentlemen were proposed for election:—R. Sidney Alexander, M.B.Lond. (Rochdale); Frederick Carden Brodie, L.R.C.P.Lond.; James Chalmers Cameron, M.D. (Montreal); John Hamilton, F.R.C.S.Ed. (Burton-on-Trent); Arthur W. Rowe, M.D.Dur. (Margate); and Arthur Vores, M.R.C.S. (Uppingham).

CONDITION OF PLACENTA IN UTERUS REMOVED BY PORRO'S OPERATION.

Dr. Galabin showed a uterus removed last September by Porro's operation, which he thought might be of interest in reference to the mechanism of detachment of the placenta. The uterus was very thick, and contracted strongly at the operation. The placenta had not remained entirely attached, as was generally the case in the Porro uterus. It was detached at the lower part for about an inch and a half from the edge, the detachment appearing to have commenced at the margin. It would seem, therefore, that in this instance detrusion by the uterine contraction was an important element in the mechanism, since otherwise the detachment would have been uniform all round, and not at the lower part only. There was an eversion of the placenta, which was attached to the posterior wall, through the incision in the anterior wall, so that the posterior wall had become concave externally. This was evidently due to the contraction of the inner fibres having been impeded by the still attached placenta, while the outer fibres had contracted more freely. Both these peculiarities had been noticed in the specimen when fresh. Mother and child lived.

A SPECIMEN OF FIBROMYOMA FROM A CASE OF CÆSARIAN SECTION.

Exhibited by Dr. Horrocks.

The President then delivered the Inaugural Address.

INAUGURAL ADDRESS.

GENTLEMEN,—I thank you for the honour you have done me in electing me to this chair—a chair which has been occupied by the greatest and best physicians practising obstetric medicine in this country—an honour the greatest which the Society can confer on any one of its members. In accepting this high position I feel I undertake a great trust; for the work of this Society has had, has now, and should always have, a great and beneficial influence upon the progress of the science and the practice of the art for the cultivation of which the Society mainly exists. I am, however, encouraged by my knowledge of the character of the officers associated with me in carrying on the work of the Society, as well as by my knowledge of the Fellows of the Society, alike those who are regular attendants at its meetings, and those who contribute to its 'Transactions' and take part in its discussions. I feel sure that I shall not fail of the help of all.

My first duty on taking this chair is to address you—to deliver an inaugural address, and I at once confess at the very outset that I have been perplexed and in difficulty. It would have been no easy task to have written a contribution of a scientific character for discussion by the Society. Whenever I have ventured upon such an undertaking it has been with diffidence and misgiving of the thoroughness of my clinical and pathological observations, as well as of my knowledge of the work of those who had preceded me; but on those occasions I have been buoyed up by the feeling that what I was about to bring before the Society was brought there to be tested, put to the proof, subjected to your criticism, which I have always found to

be not only gentle, but generous also. To-night, however, the circumstances are changed. I have to speak *ex cathedrâ*, and this fact naturally does not give me greater freedom, but rather increases my difficulties, for I feel that my utterances cannot be corrected by your better wisdom. After the many able and learned addresses which have been delivered from this chair in the past, addresses which embrace almost every topic of temporary or permanent interest in connection with obstetric practice, it would have been impossible for me to have found a new theme for my discourse—unless, indeed, I had chosen to discuss a purely scientific subject; and it would have been equally difficult for me to have told you anything new about an old one. On occasions like the present, however, it cannot be amiss to take observations and determine the place to which we have steered or drifted; and I would look back, not at the history of this Society and its work only, but I would glance at the history and progress of obstetric science and practice, and I would do this not merely with a view to recount our triumphs, to survey our acquisitions, and lose ourselves in admiration of our brilliant achievements, but I would look also at the other side of the page, and would do that which may perhaps prove more profitable,—I would recall to our minds our defeats and failures, inquire into the causes of our disasters, and hold up to the light our errors in the past, so that they may prove of some use at least as beacons to point out the places where we departed from the path of truth, and to warn us against the will-o'-the-wisps which have been but too often mistaken for the light of science. I would look around with a view to examine the position we at present occupy, and I would look forward with the object of planning the best course for our progress in the future. It would be impossible for me in the time at my disposal to discuss these subjects even in the briefest manner, and I shall confine myself to a few observations of a discursive character which appear to me to be not uncalled for at the present time.

Obstetric medicine is divided into two branches—midwifery and the diseases of women. Great activity has been shown in both branches during the last thirty years, and great progress has been made. The estimate which is generally made of this progress is, however, of a one-sided character. The progress of midwifery has rarely been referred to; it has been overlooked, though not entirely; and yet to an impartial judge there can be no doubt about its extent and character. Indeed, to my mind, and to the minds of those who regard the saving of life as the crown of our work, the progress of our knowledge in midwifery has been far greater than in the diseases of women. Our knowledge of the use and application of the forceps, of the mechanism of labour in distorted pelves, and of pelvic measurement, and the means at our command for abolishing craniotomy, have saved many lives. And what shall I say of the introduction of antiseptics into the practice of midwifery? Forty years ago Semelweiss issued a few rules to be observed by the students attending women in labour in the Vienna Hospital. This proved to be the beginning of the greatest and most beneficent practice introduced into our department of medicine in this century. The work begun by Semelweiss has been crowned by the researches of Pasteur and Lister, and to-day we are in possession of the means to prevent the greatest scourge that afflicts lying-in women. When we compare the number of women who pass through the danger of childbed with that of the fit subjects of obstetric surgery, the latter sinks almost into insignificance, and the magnitude of the means placed in our hands for the prevention of puerperal fever looms high above that of all other possessions of the obstetric physician. I fear that this has been too little recognised by all who attend midwifery, for the strict use of antiseptics confers an infinitude of blessings upon the physician and upon his patients.

If we cast a glance at the history of that branch of obstetric medicine which deals with the diseases of women, the fact which strikes us first of all is the marked change

which has come over it during the last thirty years—the surgical character which has been given to it. I am not going to recount to you the triumphs of abdominal and pelvic surgery. It has been done often, and indeed almost periodically, by those more fitted for the work than I. Their magnitude and their beneficent character are evident to us all. But all the pelvic and uterine surgery of the past cannot be described as triumphs. Much of it has better claims upon the term "disaster." There is hardly a disease ranged among the diseases of women, from the most trifling to the most severe, from vaginismus to uterine cancer, for which some surgical proceeding has not been suggested. This extraordinary state of things prevails nowhere else, and how is it to be accounted for? Is it to be ascribed to the failure of medical science, or to the slowness with which medical treatment accomplishes its objects? Is it due to impatience and hurry on the part of the practitioner? Does it arise from a plethora of surgical genius in our department? Or may not other causes play an important part in bringing about the present phase of the practice of the diseases of women? As with the diseases of other parts of the body, many of those which affect the female pelvic organs, are, we readily confess, not amenable to treatment of a medical kind, and in some of these the art of the surgeon intervenes rightly and beneficently. There are others, again, in which the art of the surgeon has been practised in vain or with evil consequences, but which have been subdued by the skill of the physician. There are others, again, which are cured neither by the skill of the physician nor by the dexterity of the surgeon, and this fact we should not have the obliviousness to forget nor the recklessness to overlook in practice. Hitherto surgery has proved of the greatest use in the removal of excrescences and the repair of injuries. When it has ventured beyond this, has it not been productive of more evil than good?

We are next struck by the number of operations which have been devised, suggested, and practised; by the extra-

ordinary divergence of opinion held by authorities with regard to their value; and by the number of them which have been practised for a time, and then, entirely or almost entirely, discarded. This is a state of things which obtains in no other department of medicine or in the surgery of any other part of the body. The practitioners of obstetric medicine are divided and subdivided, and the various groups which they form are separated by impassable gulfs; they pursue diverging lines and continually increase the distances separating them from one another; and there is no chance of their ever meeting except by retracing their steps. What are the causes of this deplorable state of obstetric practice? Have the many operations which have been proposed and practised been based upon carefully ascertained data—data acquired by honest scientific labour? Or have they been based upon hypotheses—the offspring of a too active imagination? Or have those who have been opposed to the present surgical mode failed to appreciate ascertained scientific truths? It would not be possible for me under any circumstances, perhaps, to answer these questions fully, and now I can only refer to one or two facts which have a bearing upon the answer. The fact that many operations which have been proposed and practised have proved useless or injurious and have been discarded indicates that such operations were proposed on insufficient and untenable grounds. This will appear beyond doubt if I remind you of the history of vaginismus and dysmenorrhœa. The operations proposed for the cure of the former have entirely failed. And how many a hypothesis has been started—with unfortunately its usual appendage, an operation—with regard to the etiology of dysmenorrhœa, and raised to the rank of a theory without even the shadow of a foundation! What disasters have they led to, and how barren of good results have they proved! There can be no objection to hypotheses as such—they are essential to scientific research; but they should be made to be tested and not acted upon, to discover truth and not to be taken for it. It appears to me that the present surgical aspect

of obstetric medicine arises chiefly from the promulgation of flashy hypotheses and their acceptance as established truths. The mischief arising from the too ready acceptance of surmises cannot be exaggerated, and I will give you a further illustration of it from the other branch of obstetric medicine. About a quarter of a century ago Dr. Braxton Hicks enunciated the scientific method of treating placenta prævia. For nearly five-and-twenty years this was overlaid by a mass of teaching based upon false hypotheses and exceptional occurrences, and has only recently been rescued from beneath the mass of error and reintroduced to us through the exertions of a German explorer. Hypotheses and their ready acceptance have been the bane of obstetric science during recent years. We should prove all things, and especially hypotheses burdened with operations.

Although what I have mentioned is probably the chief cause of the surgical aspect of practice in the diseases of women, yet there are other causes for it, and I would mention one of them, and that is the wonder-inspiring character of many of the operations practised for pelvic diseases. This is the side of them which appeals to the public, and unfortunately also to a large number of the profession. Like the most dangerous feats of the acrobat, they appeal irresistibly to a quality of mind which is far from uncommon. How often have we heard the greatest admiration expressed for a doctor, not because he was learned and skilful, but because it was "kill or cure with him"! This quality comes out in a very marked manner in the love of quackery shown by those who cannot profess ignorance as an excuse for their folly. The untrained human mind is brimful of it.

If we look around us and glance at the present, we find untiring activity everywhere—sometimes well directed, sometimes ill. In France excellent work is being done; Germany sheds abroad the facts gathered in her large lying-in charities and her laboratories; and the 'Transactions' of this Society and those of its sister societies in Scotland

and Ireland attest the amount and excellence of the clinical and pathological work done in this country. To America we owe much that is excellent in midwifery and in the treatment of disease. In that great country much of the energy of the profession is, however, devoted to the impossible—to setting the coping-stone before the foundation has been laid. At the same time, we rejoice that many of our brethren there are devoting themselves to clinical and pathological work. But there is one phase of the work done in their obstetrical societies which I cannot pass by without an expression of regret, and that is the practice of publishing imperfect reports of operations before the results, immediate and remote, of the operations are known. I can conceive no good to result from publishing operations on a Thursday which were performed on the previous Monday. Indeed, I know of no practice so likely to be productive of unalloyed mischief. It is a practice which I trust will never be introduced into our Society. If it is intended to benefit science by it, the intention must fail; and if it be for the purpose of mere advertising, I have no words bitter enough to express my contempt for it. Were this Society a mere advertising medium, I would neither hold office in it nor be a member of it for an hour. It is, however, an excellent publishing medium, and it is right that it should be such. We do not light a candle and place it under a bushel; nor do we bring new facts and new discoveries into this room to hide them, but for the enlightenment of one another and of the profession. My faith in this Society and my hope for its future is not based upon its excellence as an advertising medium, but upon the number of scientific workers among its members. These are increasing, as is attested by the number of papers in the hands of the secretaries and the pressure on our time and space. And what is the work before us in the future? Is it the cure of disease and the relief of suffering? Yes. Is it the discovery of new drugs and their effects? Yes. Is it the improvement of obstetric surgery? Yes; all this and a great deal more.

The present surgical aspect of the diseases of women is surely destined to pass away; it cannot be permanent. Were it otherwise, we should have to confess that medical science has proved an utter failure. Mutilation is not the highest goal to which medical and surgical skill can reach. A time will come when obstetric science will assume a preventive character. Although we cannot hope to abolish disease, yet we may be able to discover the means of preventing it, and perhaps of curing it without the aid of surgical art in its present mutilating character. We are already possessed of the means of preventing a large number of the chronic diseases and sufferings of women in the application of antiseptics to midwifery. This gives us the control of a large class of the inflammatory affections of the pelvis. Forty years ago the idea of preventing or abolishing puerperal fever and puerperal inflammations would have been scouted as Utopian, and who knows but that forty years hence some president of the Obstetrical Society may not be able to announce to his audience and to some of you that obstetricians of that day possessed the means of preventing the growths of ovarian tumours or of fibroids or of cancer?

The progress of our science is not to be limited. It is not to be made, however, by happy guesses, but by steady work, and in no long time by co-ordinate work. Facts of all kinds, great and small, are to be accumulated. The present surgical activity would, if rightly employed, prove of service in bringing about the time I anticipate, and its own extinction, by making known facts which cannot well be otherwise discovered. No operation should be performed for cure simply, but also for investigation. No operation should be performed without a reasonable chance of cure or relief. Many of the operations now performed can be reasonably regarded as experiments only. If they can be justified at all, they can only be justified when done under the strict conditions of an experiment. Unfortunately, however, we know but little of the real results of operations of doubtful repute. But the help of surgery of a doubtful

character is not the only or chief means of sound progress. This has always been, and will be in the future, the result of patient watching by the bedside and careful observation of disease extending over years, and by continuous work in the laboratory. It will also be the work of the profession as a whole. It cannot be accomplished by the hospital and consulting physician and surgeon alone; it requires the help of the family doctor, of the town doctor, and of the country doctor. Each one has his work to do. As a rule, passing phases of disease only come under the observation of the hospital physician, while the whole course of it passes under the eye of the family doctor. Many of the diseases peculiar to women are of a very chronic character, and, as in other branches of medicine, their source is to be sought in antecedents long passed which come under the ken of the family practitioner only. But the country doctor has his part to do in this work. It is only by research everywhere, in town, in country, in patients of different occupations and different constitutions, that the necessary facts can be obtained, and the country doctor is in this respect placed at an advantage over his town brother, although in other respects he may be placed at a disadvantage. This Society should gather facts from all quarters and from all sorts of practitioners—all kinds of facts bearing on health and disease. I have pointed out to you fields where each one of you can by patient work attain distinction and become contributors towards the progress of the science which we cultivate. To this work I invite you, and while I occupy this chair I shall welcome with equal partiality every fact—the smallest and the greatest—which is calculated to contribute towards the object which we have in view.

Dr. Graily Hewitt proposed that the best thanks of the Society be given to the President for his admirable address, the matter of which was such as to commend itself in the highest degree to the approbation of its hearers, and to justify the conclusion that Dr. Williams's presidency

would contribute much to the advancement of the science in which the Society is interested. Having had the advantage of association for several years with Dr. John Williams as a hospital colleague he might be permitted to say how cordially they had worked together, and how he had learnt to appreciate the eminent personal and other qualities of their distinguished President.

The vote was seconded by Dr. BRAXTON HICKS.

ADJOURNED DISCUSSION ON DR. GIBBONS'S CASE OF GALACTORRHŒA.

DR. MATTHEWS DUNCAN noticed the great neglect of the science of lactation and the consequent deficiency of literature connected with this important and interesting department of practice. He believed Dr. Gibbons's paper to be the fullest account of the subject. Galactorrhœa required definition, for there were many kinds. That prolonged and exhausting suckling which led to depressed health and melancholia might be, but was not, classed as galactorrhœa. In Dr. Gibbons's case there was no excessive flow, for thirty ounces a day, or near it, could not be so regarded; his was a case of long continuance of the flow in quantity nearly what was secreted by an actively nursing woman. Dr. Matthews Duncan had seen, in a healthy young woman, the flow constant and so excessive as to run through the bed and over it so as to be collected; many pints a day, but not for many weeks. Another kind of excessive flow, and unnatural also, was not very rare in rich-blooded young women,—milk running from the idle breast while the other was being sucked. He had watched such a case when the wasted milk was apparently more than the child could be swallowing, the flow going on in the breast unstimulated by the suckling infant only while the natural stimulus of sucking was applied to the other breast. The unilaterality of Dr. Gibbons's case was very

interesting, but such unilaterality in ordinary healthy nursing was not very rare. In Dr. Gibbons's case cure came at once on the appearance of delayed menses, and it was most natural to ascribe the arrest of lacteal secretion to the appearance of the menses, the one function alternating with the other, as the growth of stags' horns with the rutting. Dr. Matthews Duncan would mention, though not immediately pertinent to the case, the increased richness in cream of the afterings of women. This he had repeatedly verified. "Afterings" was the name given by dairymaids to the small quantities of milk got from the cows on going over them again in a second milking after the first great milking was finished. Afterings in cows were specially rich in cream.

Dr. CLEVELAND drew attention to what he had found a source of perplexity in practice. He alluded to a form of galactorrhœa, or, as he would prefer to call it, "incontinence of milk," and would illustrate his meaning as follows: An infant at the breast would cry more than usual, not seem satisfied, nor sleep so long as it should, after being fed, and not present the well-known appearance of thriving. On inquiry as to the suckling the frequent reply is "that there is plenty of milk," and "that it even runs away." Now, he had again and again satisfied himself, in making the usual examination of a wet-nurse, that if she were a primipara and apparently had well-developed breasts, yet she would prove unequal to her duties if she was subject to this form of galactorrhœa. It would seem to him that here there must be a disproportion between the glandular activity of the breast and the storage capacity of the milk-tubes or reservoirs. Unless these reservoirs are dilatable as indicated by a looseness of texture or "bagginess" of the breast encircling the nipple to some extent, much of the milk that should be in readiness when the child is suckled is not available, and when the draught comes, the milk runs out so fast that a considerable portion is often lost. Hence the child under such circumstances is imperfectly nourished.

Dr. JOHN PHILLIPS mentioned a case reported by Dr. Cuffer. A recently-confined left-handed woman during lactation was suddenly attacked with left hemiplegia and aphasia. The right breast ceased secreting, but from the left a copious flow ensued and continued for some time. Dr. Phillips thought that the fourth, fifth, and sixth intercostal nerves being paralysed, the sphincteric action of the nipple was abolished and galactorrhœa resulted.

Dr. HORROCKS remarked that galactorrhœa strictly speaking was uncommon. He mentioned a case under his own care in a married but sterile woman with dysmenorrhœa, and scanty and irregular menstruation. He compared the physiology of secretion of saliva with that of milk and suggested that galactorrhœa might be due to a vaso-motor or pure nerve influence. The secretion of milk was intimately associated with the ovaries, but the nervous pathways had not yet been fully ascertained.

Dr. ROUTH, premising that he laboured under the disadvantage of not having heard Dr. Gibbons's interesting and exhaustive paper, yet from its abstract just read wished to make one or two remarks. He fully concurred in the remarks made br Dr. Matthews Duncan as to the varieties of galactorrhœa, all of which with numerous cases, and duly illustrating the causes, he had given fully in his (Dr. Routh's) work on 'Infant Feeding' under the heading of "Galactorrhœa." He had also mentioned another cause, "local congestion, and arrested menorrhagia and other secretions as productive of galactorrhœa," not mentioned by Dr. Duncan. But it was more especially in regard to the treatment of these cases he wished to speak. First, as regarded the breast itself. Amid the many remedies adopted, why was not local pressure by strapping or bandaging over the breast carried out? It was a well-known method of treatment, as in cases of rachitis, or swelled limbs. He remembered a case where a lady continued to secrete milk out of her breasts long after the suckling of her child had ceased, and which persisted some three years, and then became restricted in a measure to one

breast. This yielded to the pressure treatment to a certain extent. But secondly, it completely stopped when his attention and the treatment were directed to the womb. The relations between womb and breast were very remarkable; for instance, suction inducing contraction of the womb, and again the swelling and tenderness of the breasts with many women during menstruation, and the mastodynia often induced by uterine and ovarian disease, which remained incurable, until the womb or ovaries were treated. On this hypothesis he had ventured in his case above mentioned to make a full examination of the womb and ovaries, and found both were in a state of great congestion with ulceration and copious muco-purulent secretion from the os, and endometritis. So soon as these affections were cured the milk secretion ceased. Again, in Dr. Gibbons's case, it was noteworthy that so soon as the menstrual function was established the galactorrhœa ceased. Now, he should have thought that if Sir James Simpson's plan had been adopted of introducing a piece of caustic within the uterus, and thus determining a flow of blood or menses, the cure of nature might have been anticipated. He (Dr. Routh) had certainly often induced the flow of a bloody discharge from the uterus by this method, and which sometimes recurred before the patient left the house, and continued for two or three days. So speedily indeed did the caustic induce this flow that he had been told that Dr. Simpson actually had prepared some of his patients' napkins to meet the emergency when he performed this operation.

In reply to Dr. Playfair, Dr. Routh said he could not then and there give chapter and verse for the use of caustic in this way, but the instrument Sir James used for that purpose was in the hands of most gynæcologists and he believed the statement he had made was correct.

Dr. GALABIN said that he had met with a case of galactorrhœa which appeared to be an illustration of the relation between this affection and the absence of menstruation, somewhat similar to that recorded in the paper. A single woman, aged twenty-four, had never menstruated

regularly, and had only had a slight show on two or three occasions. During a period of complete amenorrhœa she became pregnant. According to her account, this occurred from a single coitus, in which there was only momentary contact. Pregnancy ended in a miscarriage in the fourth month. This was followed by a plentiful secretion of milk. Several months afterwards milk was running from the breasts, and keeping the clothes constantly wet. When he last saw the patient, several years afterwards, milk could still be squeezed from the breasts. During all this time there was no return of menstruation. He was rather surprised that the author had not tried the effect of pressure in the way that appeared to be most reasonable, namely, to make uniform pressure over the breast with bandages or strapping, leaving the nipple free. It might have been expected that the plan of making pressure on the breast including the nipple would lead to retention of secretion and such swelling and pain that the pressure could not be tolerated, as had actually occurred.

Dr. DAVSON said that bearing on Dr. Gibbons's case of excessive milk secretion and eczema, he added his testimony to the fact of having a short time ago attended a Jewish lady in her confinement. She had a superabundant secretion of milk in both breasts, but feeling weak left off nursing after a short time, especially as eczema appeared on the right breast, which had a retracted nipple. Remedies all failed to reduce the secretion; the eczema was slightly benefited by the painting of a weak solution of nitrate of silver, but the milk secretion did not cease until, a few months later on, her menstruation commenced, when the eczema also disappeared.

Mr. BLAND SUTTON said that the remarks which fell from Dr. Horrocks concerning the relation between the mammæ and ovaries were of great interest. The relation was something more than casual, as the following observations made upon mammals would serve to show. Two cows astonished their owner, a milkman, by furnishing double

the usual quantity of milk. The secretion was, however, poor in quality. The cows continued to supply this increased amount of milk long beyond the usual period of lactation, and began to fall away in flesh. Eventually bovine tuberculosis declared itself and the animals were killed. All the organs were more or less affected by the disease, and the ovaries were "tubercular" in both cows. Galactorrhœa of this character is not uncommon in cows affected with bovine tuberculosis implicating the ovaries. The milk is abundant, but very poor in quality. The third case occurred in a goat. The animal presented on the left side an enlarged mamma from which a thin, milky fluid exuded in large quantity over a period of many weeks. Eventually the goat was killed, and on post-mortem inspection the left ovary was found to be of large size and cystic, the cysts attaining goodly proportions. The enlarged mamma was found to present the usual characters of the gland during lactation. The three cases quoted were of interest, as they showed undoubted disease of the ovaries associated with galactorrhœa.

Dr. HERMAN asked whether the mammary abscesses from which the patient had suffered might not be the explanation of the unilateral character of the galactorrhœa, one breast not secreting because of destruction of gland-tissue by the abscess.

Dr. CHAMPNEYS said that Dr. Gibbons's case exemplified the antagonism or alternation between lactation and menstruation. But there are cases in which profuse secretion of milk coexists with uterine hæmorrhage. In such a case under his care the breasts swelled more and more with milk (though it did not run away much), and the more the breasts swelled the greater the uterine hæmorrhage became. Nursing was stopped, ergot given, and the breasts soon subsided. With regard to the treatment pursued, he could not see why the presence of eczema prevented strapping; it would not, he thought, have been difficult to apply a drying powder on lint or cotton-wool and to have strapped over it, bringing the

straps more than half round the body in the usual way. Another piece of treatment, of which he was surprised to find no mention, was the administration of ergot. This has direct evidence in its favour in the existence of recorded cases where nursing women have lost their milk after taking it; a hint in this direction is also given by cases of excessive secretion of milk accompanied by uterine hæmorrhage. Derivation to the uterus by hot foot-baths was also not mentioned. As regards the treatment of Sir James Simpson, quoted by Dr. Routh, he could imagine that it might cause uterine hæmorrhage, but he much doubted whether such hæmorrhage could be considered menstruation. He was much interested by Dr. Bland Sutton's personal observations on animals, for it tallied with detailed accounts which he had read in an American journal of wholesale spaying of milking cows in Texas, with the result that the milk had gone on, much to the owner's satisfaction, for a long time, in one case for eleven years. He had not yet heard of the same experiment in the human female.

Dr. Heywood Smith said it would tend further to elucidate this important subject if Dr. Matthews Duncan could inform the Society, with regard to the interesting case he quoted, what the treatment was, and also at what time the menstruation was re-established. He considered one lesson to be learnt from the discussion was that we should give more attention in such cases to ascertain the condition of the uterus and ovaries.

Dr. W. J. Collins said it was important, in order not to take a too circumscribed view of the subject of galactorrhœa, to remember that not only might it occur upon the slightest provocation, as in the case referred to by Dr. Galabin, where it followed an early abortion, but that it might arise independently of pregnancy altogether. He had seen it in female infants, also in one case in a male infant; at any rate there was here a milk-secretion abnormal in occasion rather than excessive in quantity. He would submit that the very fact of the immediate

appearance of the blood-loss following the insertion of silver nitrate into the uterus, as alluded to by Dr. Routh, was conclusive that this was in no sense a menstruation. He would be glad to hear from Dr. Gibbons what was the condition, in his case, of the affected breast after the arrest of the secretion. Was it in any degree atrophic? For from analogy with the salivary glands one might argue that this discharge was of the nature of a paralytic secretion, but if so, consecutive atrophy would be noticeable.

Dr. GIBBONS, in answer to the President's remarks concerning the presence of eczema, stated that it was without doubt caused by the constant saturation of the skin by the flow of milk. The patient had suckled for a period of four months without suffering any inconvenience from skin irritation, which only appeared after weaning the child, and gradually grew worse until coming under observation. Dr. Matthews Duncan, in his remarks upon galactorrhœa, drew attention to the fact that the mere flowing of milk from one breast was, in itself, not very rare, as was evidenced by women who could nurse with one breast only. In reference to this he (Dr. Gibbons) thought it was important to point out that not a drop of milk could be squeezed from the other breast in his case, whereas in those nursing with only one gland it was generally observed that there was, at least, a small amount of secretion in the unused breast. The case mentioned by Dr. Phillips he did not think had any bearing upon the paper on account of the presence of aphasia and hemiplegia, although it was one which would doubtless be of great interest to neurologists. Dr. Herman had made some important remarks upon the occurrence of the abscess in each breast after the first confinement, and he (Dr. Gibbons) reminded the Society that the abscess in the right breast was opened artificially, whilst that in the left breast burst spontaneously. Whether there was any connection between the damage done by the abscess to the gland-tissue at that time and the galactorrhœa fol-

lowing the next confinement he was unable to say. He might here remark, in answer to Dr. Collins, that there was milk in both breasts at first, and that the patient suckled with either gland, but after a short time with the left only, as the secretion from the right gradually ceased. When the patient was well the gland resumed its normal appearance. In reply to Dr. Champneys, he admitted that he had not used ergot, and thought that it might have been well to have tried it; he confessed, however, that seeing the numerous remedies employed without result, and the ultimate spontaneous cure, he did not believe that it would have been of any service. What Dr. Champneys had said regarding uterine hæmorrhage coexisting with galactorrhœa was of much interest. The few cases he (Dr. Gibbons) had seen of suckling whilst suffering from menorrhagia or metrorrhagia could not have been classed under galactorrhœa. Referring to the remarks of Dr. Galabin and others, who had asked why compression of the whole mamma had not been tried, he stated that he had explained in the paper that the skin, after the severe attack of eczema, was too sensitive to attempt compression. For the same reason he had not advised friction with various ointments or different medicated poultices, as had been recommended in the treatment of galactorrhœa.

THE MECHANISM OF THE THIRD STAGE OF LABOUR.

I. *The Separation of the Placenta.*

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(*Abstract.*)

The author reviews the facts furnished by our knowledge of the clinical course of natural labour, and by that derived from Porro's operation. From the former it is known that until the birth of the head the placenta is not detached, and that after the birth of the head it is not at once detached. He refers to the investigations of Lemser, who found (by examination of 168 women with the entire hand immediately after the birth of the child) that the placenta is completely detached as soon as the child is born. As regards Porro's operation, the inferences drawn from it are to be regarded with much suspicion on account of the great interference which has taken place with the uterus. He contrasts the clinical facts of labour with those derived from operation, and shows that the latter do not tally with the former.

He then discusses the theories of the *cause* of placental detachment. A. By contraction and retraction alone, through reduction of the placental site. B. By contraction and retraction indirectly, (*a*) acting by separation of the centre which is less firmly attached than the edge, leading to aspiration of blood; (*b*) by squeezing of the blood towards the surfaces during contraction; (*c*) by rapid diminution of the general intra-uterine pressure consequent on the birth of the child. C. By detrusion (Lemser), the placenta being forced in the direction of least resistance, *i. e.* the axis of the parturient canal.

He then discusses the theories of the *modes* of placental detachment. A. According to situation of placenta; B. from edge; C. from centre; D. according to firmness of attachment of its several parts.

He then considers the evidence furnished by the various facts, and shows that the great question is whether the separation of the placenta is entirely independent of any rupture of the utero-placental vessels *as a cause*; the decision of this question depends largely on (*a*) the proved amount of hæmorrhage behind the placenta in normal labours, (*b*) on the mode of the expulsion of the placenta.

He concludes finally (pending the decision of the two above questions to be dealt with in a subsequent paper) that hæmorrhage to a moderate amount plays a certain, even though subsidiary, part in the mechanism of the detachment of the placenta.

The knowledge which we possess on the subject of the separation of the placenta is far from exact. Strange as such a statement may appear at the present date, a perusal of the literature of the subject shows it to be the case nevertheless, and by no means justifies the sanguine opinion of Dohrn (loc. cit. S. 546) that "the process by which the placenta and membranes become detached without artificial interference has lately become known to us in its details."

The following inquiry, to which the writer has been impelled by the conviction (forced upon him by his failure to verify certain current views) that the subject is in a far from satisfactory state, aims, in the first place, at the formation of a summary of our present knowledge, and at the formation of certain deductions from ascertained facts.

The literature of the subject is voluminous, but while opinions, arguments, and modes of treatment are many, direct observations are few. This is scarcely to be wondered at when we consider the difficulties with which direct observation of these processes is necessarily surrounded, carried on as they are in the dark, and during a period when they cannot be actually watched.

The direct facts, however, fall into four groups:

1. Facts concerning the condition of the placenta before the complete birth of the fœtal head.

2. Facts concerning the condition of the placenta at the time the fœtal head is completely born and before the birth of the fœtal body.

3. Facts concerning the condition of the placenta immediately after the birth of the child.

4. Facts derived from operations on the pregnant and parturient uterus.

(1) It is a fact of daily observation that the head may be all but born for an indefinite length of time without endangering the life of the child from asphyxia. This implies the non-detachment of the placenta.

(2) It is also well known that the head alone may be born, and remain for some time without breathing (though the child is able to breathe), and without immediate danger to life. This implies the non-detachment of the placenta. After the birth of the head the face often remains for some time of the natural colour, and does not become gradually livid (as from impeded return of blood from the head), but I have frequently observed that it becomes livid rapidly and after a marked interval; breathing then begins. This is often marked by a definite uterine pain, and seems to be due to commencing detachment of the placenta.

At this time the fundus uteri is about midway between the ensiform cartilage and the navel.

(3) The condition of the placenta immediately after the birth of the child has been directly investigated by Lemser, who examined 168 cases with the entire hand immediately after the birth of the child (S. 18, *et seqq.*). He found in 120 cases (71 per cent.) the lower edge of the placenta lying in the "os uteri" *immediately* after the birth of the child, and in 158 cases (94 per cent.) within nine seconds after its delivery. In no case (S. 22) could any attachment of the placenta be ascertained after the birth of the child. The normal detachment of

the placenta, if Lemser's observations are correct, is therefore complete at the end of the second stage of labour. At this time the fundus uteri is about the level of the navel.

Lemser's observations on animals (rabbits), though instructive, are not convincing, when we remember the differences between the uterus and placenta in the case of the rabbit and human female.

(4) Although Cæsarian section is a very ancient operation, it is only lately that it has been utilised for making observations on the condition of the placenta.

Of these eight only are available, namely, those by Ahlfeld, Leopold, Barbour, and Sänger.

(*a*) *Ahlfeld* (S. 43) says that in a Cæsarian section performed by Credé on a woman "bleeding to death from a varix," the placenta, in spite of general diminution of the uterine cavity, *remained attached in its whole circumference* to the uterine wall; it had certainly not been displaced from its site, and could be detached with the greatest ease from its site, beginning at the edge, without the appearance of a single drop of blood. This observation is valueless, if, as Sänger asserts, the operation was performed after death (Sänger, S. 194).

(*b*) Ahlfeld's second observation concerns a case in which Dohrn performed Porro's operation on a primipara on account of extreme pelvic contraction, a few weeks before term, pains having commenced with a certain amount of loss of blood.

The uterus was turned out of the abdominal cavity. It measured about 25 cm. (10 in.) in length, by 18—20 cm. (7—8 in.) in breadth. The lower uterine segment was constricted by an elastic tube, the anterior wall incised in its upper half, the incision extending to the fundus. The placenta was not encountered. There was but slight escape of liquor amnii. The uterus was held and compressed for about ten minutes to enable the upper part of the abdominal incision to be closed; then the uterus was cut away. Four hours after the operation the uterus (which had not been laid in any fluid) was

examined. It had retracted to a length of 16 cm. (6½ in.) and a breadth of 15 cm. (6 in.) without the cervix. The placenta presented by its upper edge at the wound; it was seen to occupy exactly the posterior wall of the uterus. With the exception of the upper edge, which had been invaded by the incision, *the whole placenta was firmly attached*, especially at the edge; while, after separating the edge, the remainder was easily detached, without the appearance of a single drop of blood. The placenta was 15 cm. (6 in.) long, by 12 cm. (4¾ in.) broad. Ahlfeld put the preparation in Müller's fluid, and draws inferences from its behaviour under the contraction thus produced, which seem to us easily assailable. He insists, however, that, throughout, the edge was the most firmly attached part of the placenta. He also lays stress on the absence of the "subplacental hæmatoma," and remarks that, although the circulation in the uterus had certainly been arrested by the elastic ligature, there was enough blood in the uterus to have produced such a hæmatoma, if its production were essential to the separation of the placenta. As we have, however, stated above, inferences drawn from the behaviour of the placenta under conditions so manifoldly artificial, must be accepted with the greatest caution. He also explains the absence of this hæmatoma by the fact that the incision had opened the "air-tight closure" of the placenta at its uppermost part. But to this it can be obviously objected that if the uterus had the opportunity of sucking in air instead of blood it did not avail itself of this opportunity, for the placenta remained closely attached to the uterine wall. Ahlfeld further remarks that the uterus had contracted but slightly, and that strong contractions were first produced by the Müller's fluid. We have already observed that so artificial a condition can hardly be used as argument, and we should here add that the placenta had not been left in peace, but had been partially detached on several occasions.

Ahlfeld says that in the living woman this hæmatoma

must be a necessary condition, "and is doubtless assisted by stasis of blood in the decidual spaces (of the serotina). As soon as the uterine wall contracts, the centre of the placenta must become elevated, and this must cause aspiration of blood." He remarks that the placental site had contracted less than the rest of the uterine surface, the measurements of the placenta (which was firmly attached) being but little less than the average.

Ahlfeld concludes (S. 48) that the most important factor in the detachment of the placenta is reduction of the placental site, causing central detachment of the placenta and aspiration of blood.

Ahlfeld further (S. 56) remarks that there is no better method of separating delicate tissues than pressing water between them; and ascribes to the subplacental hæmatoma the function of plugging the uterine sinuses.

In view of Ahlfeld's assertion that the uterus in the case above described was feebly contracted (length = 16 cm. = 6½ in.; breadth 15 cm. = 6 in.), we may refer to his own observations (S. 62) of the dimensions of the uterus immediately after delivery. Immediately after delivery the result of ten measurements was to show that the height of the fundus above the symphysis pubis was 15·6 cm. (about 6⅛ in.), and its breadth 14 cm. (5½ in.). The points of measurement in neither case accurately represent the actual dimensions of the uterus, for in one case it had been amputated, and in the other its height is only approximately represented by its elevation above the pubes. Still Ahlfeld's measurements do not add weight to his argument.

It will also be seen that Ahlfeld's preparations do not in any way support his belief in the processes which he describes as representing the normal detachment of the placenta. Moreover, as Sänger (S. 192) points out, the congestion caused by the elastic ligature would favour the formation of a hæmatoma, which, nevertheless, did not occur.

(*c*) *Barbour's* first observation concerned a patient on

whom Porro's operation had been performed at the beginning of labour at term for contracted pelvis. The uterus was incised, and the child extracted before the ligature was thrown round the lower uterine segment, and consequently before its circulation was impeded.

The uterus containing the placenta measured when fresh 5½ in. by 5 in. The placenta was attached to the posterior wall of the uterus, *to which it remained everywhere adherent,* nowhere very firmly attached, and *certainly not more firmly at its margin than its centre.* It measured 5 in. (12·8 cm.) by 4½ in. (11·5 cm.).

(*d*) His second observation concerns a woman on whom Porro's operation had been performed on account of a large fibroid of the cervix and lower uterine segment. The patient was at the end of pregnancy, and had been in labour twenty-four hours; the os was expanded, but the membranes had not ruptured. A ligature was thrown round the lower uterine segment before the incision was made in the uterus. On making it very little blood flowed; the incision escaped the placenta. *The placenta was everywhere attached to its site,* which measured 4½ in. (11·5 cm.) by 4¼ in. (10·8 cm.). The dimensions of the uterus are not given.

Barbour concludes that diminution of the placental site does not separate the placenta, that no sub-placental hæmatoma had occurred, and that therefore the mode of detachment of the placenta is by the expulsive action of the uterus acting on it as a foreign body (conf. Lemser). He points out that in his preparations there is no uterine cavity, both walls of the uterus lying closely against the placenta.

(*e*) *Leopold's* first case ('Arch. f. Gyn.,' Band. xix, S. 403) concerned a woman on whom Cæsarian section was performed on account of a generally contracted, flat pelvis. Labour had set in some hours. No elastic ligature was used, but the uterus was strongly compressed. The placenta was easily detached *without any bleeding worth mention.* No dimensions are given.

(*f*) Leopold's second case (ib., Band xxiv, S. 427) also concerned a woman in whom Cæsarian section was performed on account of a generally contracted, flat pelvis. Labour had set in eight hours.

(*g*) Leopold's third case (ib., ib.) concerned a woman on whom Cæsarian section was performed on account of a generally contracted pelvis. Labour had set in thirty hours and a half.

In neither case was the elastic ligature used before incision of the uterus, the circulation being controlled by the hand round the lower uterine segment. The placenta was in both cases easily detached. "The bleeding from the . . . placental site was only moderate, and diffused over the placental site (flächenhafte)." No dimensions are given.

(*h*) *Sänger's* case concerned a woman on whom Cæsarian section was performed on account of a generally contracted, flat pelvis. Labour had set in. *The incision in the uterus cut the placenta through; the bleeding was but slight.* The placenta was removed by the hand. No subplacental hæmatoma was seen. No elastic ligature was used until after the uterine incision.

Consideration of Uteri derived from Operations.

It is not here our intention to discuss and criticise the views of individuals. That has been ably done by Sänger, who justly calls attention to Ahlfeld's assertion that there must normally be a sub-placental hæmatoma, in spite of its absence under the favouring conditions of the elastic ligature round the lower uterine segment, early ligature of the cord, and handling of the uterus. Ahlfeld explains its absence by the hæmorrhage from the uterine wound, the penetration of air between placenta and uterus (the incision having fallen partly upon the placental site), and the small amount of uterine contraction. Sänger criticises these easily criticised statements.

As regards Barbour's observations, Sänger does not think that his preparations support his views.

Sänger adds that Ahlfeld's and Barbour's preparations show the condition of the uterus only up to a certain point in the third stage of labour, beyond which interference prevented all advance; and adds that the process of detachment cannot be rightly separated from that of expulsion, and that the uterus, incised as in Cæsarian section, or amputated as in Porro's operation, is incapable of full contraction. In five uteri the subjects of Cæsarian section, he found the uterine walls after incision to be much thinner than usual in post-partum uteri, and refers this diminution in contraction and retraction to (1) division of nerves in the uterine walls; (2) destruction of the power of concentric contraction by the uterine incision; (3) lowering of the vascular tension. Both Ahlfeld and Barbour remark that the placental site in their cases had contracted less than the rest of the uterus, but consider this difference pathological.

Leopold in no case waited for the process, but detached the placenta. His remark that no bleeding followed its removal is met by Sänger with the remark that it could hardly be expected after the contraction and retraction of the uterus (induced presumably by emptying it of its contents) had closed the mouths of the sinuses, after the stoppage of the circulation by the elastic ligature or the fingers, the bleeding from the uterine incision, and the absence of uterine atony.

The absence of detachment of the placenta in Ahlfeld's and Barbour's cases is due to absence of strong contractions before the removal of the uterus, and "death" of the uterus after. In conclusion, Sänger remarks that in future operations (1) the uterus should be observed *in situ*, and not lifted out of the abdominal cavity; (2) no interference with its circulation below should be exercised; (3) the placenta must be uninjured; (4) the process of detachment must be entirely uninterfered with; (5) during

uterine contractions the incision should be firmly closed by the hands.

To our judgment, the conditions are altogether too unnatural in these operations to argue from, either as regards bleeding from the placental site, or the behaviour of the placental site in normal cases; and it seems to us that conclusions founded on the idea that the process at all necessarily resembles the natural process cannot be maintained. Most of the observations, indeed, show nothing decisive.

One point, however, seems to us not to have been remarked, and that is, the strange contrast between the uterus at the end of the second stage of labour and the uterus after Cæsarian operations:

1. At the end of the second stage of labour the uterus is "up to the navel;" it is not markedly flattened from before backwards, and the placenta is already detached according to the only observations we possess—those of Lemser.

2. A uterus after Porro's operation is certainly not longer, probably considerably shorter; it is markedly flattened from before backwards; and the placenta is firmly attached.

More conclusions than these do not seem justifiable. Indeed, the literature of the whole subject bears evident traces of theorising and dogmatism far outstripping facts at present available. To make an eventual advance we must make a present retreat.

Theories of the Cause of Placental Detachment.

A. *By contraction and retraction alone, through reduction of area of the placental site.*—Baudelocque speaks thus (Tome i, p. 310): "The womb is the principal agent . . . ; its action alone produces the detachment of the placenta . . ."

Although Baudelocque is often quoted as a partisan of the theory of separation by the formation of a central

hæmatoma, I can nowhere find the hæmatoma mentioned otherwise than as an incident in the process.

Duncan (pp. 240—256) is plainly of this opinion also, and this is at present the received view. I need not quote in proof of this assertion (see Lemser, S. 23, *et seqq.*).

Schultze (Wandtafeln. Text zu Fig. 3 u. 4, der Tafel xvi; 'Deut. med. Woch.,' 1880, No. 51, S. 677) is of the same opinion, attributing to the blood collected behind the placenta the task only of helping the *expulsion* of the placenta and membranes.

Dohrn (S. 546) adopts Schultze's view.

These authors thus agree on the cause of the detachment while they differ on the cause of the expulsion of the placenta.

B. *By contraction and retraction indirectly.* (*a*) *By aspiration.*—Ahlfeld believes that, in consequence of the firmer adhesion of the placenta at its edge than in the centre, the result of contraction and retraction is to separate the central parts, and to "suck in blood" (S. 48).

He also says (S. 50): "As the uterus diminishes, the centre of the placenta becomes more and more pressed into the uterine cavity, the central effusion of blood increases, and, being exposed during the contractions to a pressure which drives it centrifugally, contributes to the detachment of the edge of the placenta, and finally of the membranes."

This theory of aspiration involves a "vis a fronte."

Another theory states that the subplacental hæmatoma is produced, or at least favoured—

(*b*) *By squeezing of the blood towards the surfaces during uterine contractions, the pressure falling with greatest effect on the most vascular and also least contractile part of the uterine walls, viz. the placental site.*—The diminished contractility of the placental site is inferred by Ahlfeld from the size of the placental site noted in a Porro operation already referred to. This measured 15 cm. (6 in.) by 12 cm. (4¾ in.), "only a little less than the placenta of a child 49 cm. (19½ in.) long should be expected to measure"

(S. 50). Evidence derived from this source cannot be received as necessarily illustrative of normal processes. No doubt the placental site often has a behaviour of its own; whether this is the rule or not we do not at present know (see Duncan on the 'Production of Inverted Uterus,' loc. cit., p. 296, *et seqq.*).

Ahlfeld remarks (S. 50): "It follows from this fact that, in the normal process of placental detachment, there is, even in the placental period, an increased amount of blood at the placental site; another reason for the physiological production of a hæmatoma."

A similar observation has been actually made by Dr. John Williams with regard to the menstruating uterus. He says (loc. cit., p. 764): "In some of the uteri examined by me during the menstrual flow, the muscular wall was pale, though the mucous membrane, the surface immediately under the peritoneum, and the broad ligaments, were greatly congested, the blood having been driven by contraction of the muscular wall to the peripheral vessels."

(*c*) *By the rapid diminution of the general intra-uterine pressure consequent on the birth of the child.*—Ahlfeld (S. 54) says: "I find another reason why the detachment of the placenta only takes place after the birth of the child in the sudden diminution of counter-pressure. As long as the breech of the child and the liquor amnii are still in the uterus, the general intra-uterine pressure is so considerable that the placenta is pressed against the intra-uterine wall. As soon as the uterus is emptied the counter-pressure ceases, and the placenta bulges into the uterine cavity."

These views imply a "vis a tergo."

It must be remarked that neither of these processes can possibly derive confirmation from animals, in whom no part, or an inconsiderable part, of the internal tissues comes away, not to mention the differences in the uterus of the human female and that of the lower animals. Such processes as these imply a large lacunar system in the maternal part of the placenta.

C. *By detrusion.*—This theory is upheld by Lemser (S. 51), who says: "The detachment of the placenta in the human female is due to the fact that the adhesions of the after-birth cannot follow the reduction of area affecting the uterine walls, and (*principally*) to the displacement of the after-birth from its site by the ascending and descending contractions of the uterus."

Lemser's conclusions are founded on experiments on rabbits.

Barbour adopts the view that separation is due to detrusion alone. He says (loc. cit.): "These preparations (Porro uteri) inform us that diminution of the placental site does not separate the placenta; they also show us that retro-placental hæmorrhage has not occurred. They point to the third as the chief factor in the detachment of the placenta, viz. *that the uterus contracts on it, and detaches it as a foreign body.*"

Ruysch (loc. cit., p. 9) described the circular layer of uterine fibres as designed "ad depulsionem placentæ."

Theories as to Modes of Detachment.

A. According to situations of placenta (Baudelocque).

B. From edge (Ribemont).

C. From centre (Solayrès, Ahlfeld).

D. According to firmness of attachment of its several parts (Ribemont).

A. *Baudelocque* (p. 311) says: "Sometimes separation begins at the centre of the placenta, and sometimes at a point of its circumference, which produce different phenomena.

"In the former case, the middle of the placenta being pushed forwards, this mass becomes folded on itself, so as to form a pouch behind it which fills with blood, and to present its surface covered with membranes and vessels.

"A pouch very similar is formed, and the placenta presents in the same way when it begins to separate from the womb by the edge which is most remote from the

uterine orifice, but the process is very different when it detaches itself from below, especially if it is situated near the orifice. The placenta then becomes rolled cylindrically on itself corresponding to the long axis of the uterus, so as to present to the examining finger its lobed surface, and so that its expulsion is always preceded by a little fluid blood."

B. *Ribemont* (p. 45) says: "It seems to me that if the adhesion of the placenta is uniform, and if retractility and contractility act regularly, its detachment will also follow a regular course, and will take place in a constant direction. What does the uterus do in retracting, and what does it do in contracting?

"If we consider what takes place under these conditions at the level of a surface limited by the insertion of the placenta, it is evident that all the peripheral points of this surface will tend to approach the centre. The retreat and the diminution of its space will therefore take place from the circumference towards the centre of the surface of the placental site. In what way will an organ, soft, non-contractile, inert, like the placenta, originally spread over a surface, which, at a given moment, begins to diminish to an extent which we can easily estimate by comparing the size of the placenta with the extent of the internal surface over which it was implanted,—how, shall we say, will this organ separate itself from the uterus?

"We can endeavour to solve the question, or at least to form a pretty correct idea of the course of events, if we try the following experiment:

"On a thick sheet of india-rubber, equally stretched in all directions, I stuck a cake of modelling clay in the shape of a placenta. I then allowed the elasticity of the india-rubber to act, and it appeared to me that the cake of clay became unstuck by the retraction of the india-rubber, after the following manner: The edges first became separate, then, by degrees, and in too short a time to reckon, the detachment spread over the whole surface. It is therefore nearly simultaneously over its whole sur-

face that the surface of the cake becomes separated from the india-rubber.

"It seems to us logical to admit that the same thing happens between the uterus and the placenta.

"The placenta is therefore separated in consequence of a reduction of the uterine wall, the effect of which is to break the adhesions which joined the superficial and deep layer of the placental decidua."

C. *Solayrès* (*loc. cit.*) says: "Some authors assert that the separation of the cake from the womb begins at the circumference, but this is rare, and when it happens there is hæmorrhage. The centre of the placenta, detached by the natural forces alone, most frequently presents at the orifice, whence the accoucheur will judge, if the insertion of the cord with the placenta presents, that this insertion (of the cord) is placed near the centre, or at least not far off. . . The blood, partly liquid and partly clotted, which escapes from the uterus at the same time as the placenta, proves that its separation acts from the centre to the circumference, which confirms again the frequent inversion of the membranes at the time of their expulsion." This description, usually attributed to Baudelocque, is seen to be that of his master Solayrès.

C. *Ahlfeld* (S. 48) says: "The reduction of the placental site is the most important factor in its detachment. Since detachment of the edge cannot usually take place in the early stages, the central part becomes raised. The space thus formed becomes filled with blood by aspiration."

D. *Ribemont* (p. 44) says: "If the variable position of the placental site, at the fundus, or on the surfaces of the uterus, at a spot more or less near the inferior segment, has a certain importance, the variable degree of adhesion of the different points of the uterine surface of the placenta, the regularity of the retraction and contraction of the uterus after delivery, the more or less intimate attachment of the membranes to the uterus, are also factors that cannot be disregarded.

"Do we not, in fact, know that one or more cotyledons remain attached to the uterus, when all the remainder of the placental surface is already separated from it?

"This adhesion is such, sometimes, that the placental tissue tears, and the accoucheur who has to deal with an incomplete placenta is forced to introduce his hand into the uterus, and to proceed with some difficulty to complete delivery by separating the cotyledons artificially. After this, is it irrational to admit that, short of being pathological, the adhesion of the different cotyledons of a placenta may be more or less firm; that some of them are easily and early detached, while others are not detached until after a more persevering effort on the part of the uterus?

"What then becomes of the course of placental detachment, so regularly eccentric or concentric, admitted by authors, the accuracy of which it has never been permitted to any accoucheur to verify by sight? It will be, in the case which we have supposed, subordinate to the situation of the adherent part of the placenta.

"And the same may be said of the retractility and contractility of the uterus. Do these two important properties always operate regularly?

"Partial inertia of the uterus is known. Partial contraction is also admitted by authors. We need only refer to cases of spontaneous inversion of the uterus, to spasmodic contraction producing incarceration of the placenta, &c.

"Who can prove to us that the surface of the placental site will always retract and contract regularly? Is it not evident that, all conditions being otherwise equal, the detachment of the placenta will only be regular if retraction and contraction themselves act in a very uniform manner?"

It may be remarked that Schroeder, writing in 1885, endorses the whole of Ahlfeld's views, including the weight of the placenta as a factor in its expulsion. He says (S. 424): "The processes which take place during the

period of the after-birth have been described by Schultze, and recently by Ahlfeld, in a thorough and consistent manner. Ahlfeld rightly calls attention to the great importance of the diminishing intra-uterine pressure for the detachment of the placenta. When the detachment of the placenta begins it is hard to decide; in any case it does not always happen immediately after the expulsion of the child. The centre of the placenta is first detached; this leads to effusion of blood between the uterine wall and placenta, and the detachment of the placenta and membranes proceeds in such a manner that, if the placenta is implanted near the fundus, it appears entirely inverted, with the fœtal surface first at the vulva, and in typical cases the whole effusion lies in the inverted sac of the membranes. If the edge of the placenta is situated lower the membranes may give way earlier; the blood then escapes, while the upper edge of the placenta still adheres, and the placenta is expelled in the manner described and depicted by Matthews Duncan. . . ."

"The placenta often remains below Bandl's ring for a long time, because the mechanisms which drive it out from this situation (the weight of the placenta and bearing down) do not act reliably."

As above remarked, I have not been able to find any observations to confirm the above description of various modes of detachment and expulsion according to various sites of implantation, which seems to be the present fashion.

We will now consider the evidence furnished by the various facts previously adduced.

First, as regards the consideration of the uteri removed by *Porro's operation*.

It is evident from one of Dr. Barbour's cases that the placental site may, *under these conditions*, retract to an area of 4½ by 4½ in. without in any degree detaching the placenta.

It is not known, and it would be hard to ascertain, what is the actual size of the placental site at the end of

the second stage in normal cases of labour, at which time it would appear, from Lemser's observations, that the placenta is completely detached. This detachment seems to take place at this time, whatever the size of the placenta and its thickness, and therefore stiffness, may be. These vary greatly. We must also remember that in cases of hydramnios and in twin pregnancies (both of which involve a greatly increased initial area of the internal surface of the uterus, and therefore a greatly increased eventual diminution of this surface) the third stage of labour is usually normal, the placenta not being detached earlier than usual. These considerations make it doubtful whether diminution of the placental area (supposing this area to share the general uterine retraction) is the *only* cause of separation of the placenta. More than this does not seem to be proved by these cases, for the reasons given above. We know also that, practically speaking, the detachment of the placenta is absent or extremely imperfect until the birth of the child is complete; as soon as this is complete we have also complete detachment of the placenta, whatever its size, if Lemser is correct. This also throws some doubt on the retraction of the uterus as the *only* cause of placental detachment.

We now consider the *theories of the cause of the placental detachment.*

A. *By contraction and retraction alone.*—We need hardly discuss the question whether contraction and retraction are a *vera causa* in placental detachment, for hardly an author expresses a contrary opinion. Moreover, the clinical facts derived from cases of ordinary labour forbid any other conclusion. We need only allude to the well-known method of procuring or favouring placental detachment by procuring or favouring uterine contraction and retraction.

Whether contraction and retraction are the only causes is a question to which we have already referred and to which we shall refer again.

B. *By contraction and retraction indirectly.*—(*a*) The theory of aspiration of blood, the formation of a sub-placental hæmatoma, and subsequent contraction of the uterus diffusing the hæmatoma and leading to separation of the placenta, propounded by Ahlfeld, rests on the alleged fact of firmer adhesion of the edge than of other parts of the placenta. This, though known as a morbid occurrence, is quite unproved as a normal condition, and the deductions rest on no sufficient facts. It must also be remarked that the observations of Barbour prove that the parts external to the edge of the placenta (the membranes) are, according to the appearances of uteri derived from Porro's operation, separated from the uterine walls easily, even where the placenta is entirely adherent. The membranes therefore can give no basis of support to the mechanism described by Ahlfeld.

A further remark may be made to the effect that this primary elevation of the centre of the placenta is not easily imagined in view of the fact that the placenta itself partakes of the uterine concavity, and that contraction of the placental site might be imagined rather to increase this concavity (which would produce closer apposition of the placenta to the uterine wall) than to produce a concavity in the contrary direction.

This is the same objection as that justly raised by Duncan to uterine inversion as produced by uterine contraction alone.

(*b*) The separation of the placenta by virtue of the blood being squeezed towards both surfaces of the uterus (including the internal surface, and acting principally at the only very vascular area, viz. the placental site) is a theory which is possibly true in part. It has no direct evidence, however, in its favour, except, perhaps, the retardation of the fœtal pulse during labour pains.

(*c*) The rapid diminution of the general intra-uterine pressure consequent on the birth of the child, and acting principally at the placental site as described above, is probably a *vera causa*, though but subsidiary. In favour

of it may be alleged the cases of placental detachment and flooding which sometimes follow the too rapid evacuation of the uterus, especially in powerless labours in feeble multiparæ with dilated passages, when the uterus is unusually *large* at the time. Mere evacuation of the waters, while the fœtus is still *in utero* (as in neglected shoulder cases) is not usually competent to effect this detachment,—witness the cases in which children are born alive under such circumstances. This seems to point to detachment not taking place from rapid evacuation alone unless the internal surface is capable of rapid diminution simultaneously.

C. *Detachment by detrusion.*—This has been criticised above. It is upheld by Barbour by a process of elimination of other theories, but, as it seems to us, on insufficient grounds. Lemser founded his belief in this process on experiments on rabbits which cannot be applied to the human female; Barbour introduces his belief *à propos* of a consideration of uteri removed by Porro's operation, which we also cannot accept as evidence, for reasons given above.

Moreover, such a process of detrusion, though conceivable when the placenta is implanted on the front or back wall of the uterus, and expelled edgewise (according to Duncan's description), is hardly conceivable in fundal attachments without the formation of a subplacental hæmatoma and expulsion of the placenta, fœtal surface onwards and partially or entirely inverted, both of which details are rejected by Barbour. This question is intimately associated with that of the *expulsion* of the placenta, which we are not now considering.

Lastly, it presupposes the absence of any uterine cavity, deduced by Barbour from a consideration of uteri removed by Porro's operation. Evidence derived from this source is not to be accepted unless in accordance with known clinical phenomena as we have above said.

Is this description in the above accord? We think not. The shape of the uterus at the end of the second

stage of labour is *not* markedly flattened (usually) but is globular or ovoid in horizontal section. This surely implies that the uterus contains more than the placenta flattened and in contact with the front and back walls of the uterus. What occupies this space? In most instances a certain amount of liquor amnii enclosed by the membranes, and probably also a certain amount of blood behind the placenta. This is not asserting the mechanism of detachment by the formation of a subplacental hæmatoma. It can be proved to be likely by measuring the blood which is contained in the inverted bag of membranes after the expulsion of the placenta. This question is therefore closely associated with that of the mode of expulsion of the placenta.

Consideration of Theories as to the Modes of Detachment.

A. *Baudelocque's* descriptions of various modes of detachment according to the situation of the placenta has not, so far as I can find, been founded on direct observation. Nor is it probable that the site determines entirely different methods of detachment. It remains to be seen whether site in any way determines various modes of its *expulsion.*

B. *Ribemont's* words support the view that "*if the adhesion of the placenta is uniform, and if retractility and contractility act regularly,*" detachment will take place from the edge towards the centre. This involves two suppositions which Ribemont is far from endorsing. We shall speak of this a little further on.

C. *Ahlfeld's* belief in detachment from the edge towards the centre has been dealt with above.

D. *Ribemont's* view that the course of detachment practically depends on the firmness of attachment of the different parts of the placenta, and on the various degrees of contractility and retractility of the placental site, seems to us philosophical.

First, as regards the results of experiments with india-rubber sheets and lumps of clay.

Ribemont seems quite aware that illustration is not argument, and does not use it thus. We need therefore only point out that Ribemont does not say *how* he stuck his clay placenta to his india-rubber sheet, and that something may be supposed to depend on the material used and the uniformity of its application.

Secondly, an absolutely rigid body, like clay, is not like a placenta, which is soft and possesses a contractility of a certain degree of its own, containing unstriped muscular fibres (this, however, is disputed), as well as an undoubted degree of elasticity.

I showed the Obstetrical Society ('Obst. Trans.,' vol. xxv, for 1883, p. 160) a similar mode of illustration, which I had used in lectures for some time before I saw Ribemont's paper, viz. since May, 1882. I stuck pasteboard discs, softened in water, to india-rubber bags by means of starch paste. One bag was but slightly, the other tightly, distended. On inflating one (to illustrate the placental detachment in placenta prævia) and allowing the other (to illustrate the placental detachment in the third stage of labour) to collapse, the discs become separated, and, as Ribemont has described, generally from the periphery. This mode of illustration has this advantage over Ribemont's, that the detachment can be effected as gradually as is desired, and that the surface used for experiment is, like the uterus, curved.

From a consideration of the changes I am inclined to agree with Ribemont that *if the attachment is uniform*, and the *contractility and retractility of the placental site uniform also*, the only point which would be stationary would be the centre, and that motion would increase in the progressively distant parts. But it is equally plain that if one part is more adherent, or (which is the same thing) one part of the site contracts or retracts less than another, *the point of immobility will be situated at and*

determined by that point, which will then become the centre towards which separation will proceed.

Uniform adhesion and uniform contractility and retractility cannot be certainly conceded to occur in nature.

To sum up the whole matter, the great question will be seen to be whether or no the separation of the placenta is entirely independent of any rupture of the utero-placental vessels *as a cause.*

The view that contraction and retraction of the placental site is the great cause of the separation of the placenta is confirmed by all our clinical evidence, besides the consideration which (though founded on the doctrine of final causes) has much to recommend it from observation, viz. that contraction and retraction, being themselves causes of detachment of the placenta and therefore of rupture of the utero-placental vessels, are also the cause of the arrest of the hæmorrhage favoured by the same means. This was recently pointed out by Dr. Duncan ('Obst. Trans.' for 1886, p. 76.)

It is certain that between separation of any part of the placenta and retraction of the corresponding part of the placental site there must be a dangerous period, however short, during which hæmorrhage may take place. How great this bleeding is on an average in normal labours we will not now inquire. If it is at all measurable it will add weight to the view that hæmorrhage, to a small amount, being one of the normal concomitants of labour, is not to be neglected in the consideration of the subject before us.

Dr. Matthews Duncan, the uncompromising champion of separation by contraction and retraction alone, says (p. 254): "The absence of hæmorrhage I regard as the natural state. . . . Such absence of hæmorrhage depends on the adoption of what I describe as the natural mechanism. The presence of hæmorrhage is a part of the erroneously described natural mechanism, and to me this presence is one proof of the erroneousness of this description."

This view depends (1) on the proved amount of hæmor-

rhage behind the placenta in normal labours; (2) on the mode of expulsion of the placenta.

Dr. Duncan recognises this when he says (p. 252): "If the placenta is expelled as Baudelocque describes, and as Schultze depicts, then a loss deserving the name of a hæmorrhage is almost as necessary, as it is certainly a generally described accompaniment of the expulsion of the placenta. For the placenta has a certain amount of rigidity, and its folding on itself and the forcing of it into a cup-like shape cannot be effected without a hollow space being offered for the reception of blood, or indeed without a certain force being exerted to produce the folding and a vacuum, which force will also tend to draw blood into the said hollow from the open uterine sinuses which were in apposition to the part folded."

Dr. Duncan thus accepts the mode of expulsion of the placenta as a test of the mode, and therefore (it seems to follow) of the causes, of its detachment. If the placenta is (after all) usually expelled fœtal surface on and inverted, bleeding is, he says above, a necessary part of the mechanism. In this we entirely agree.

We cannot, even so, quite accept the view that an absolutely bloodless third stage of labour would be ideal. It seems to us more in accordance with physiology to say that the ideal process would be one in which just so much blood should be lost as would make the difference between the presence and absence of a gravid and non-gravid uterus—between the uterine circulation before and after delivery. We would refer in illustration to the increased supply of blood introduced into the body of the newborn child after birth, apparently for the new pulmonary circulation. Finally, the test of hæmorrhage (to a small amount) as an integral part of the processes of a normal third stage of labour will be decided largely by the mode of expulsion of the placenta, by the mechanism followed by the placenta, and the amount of hæmorrhage usually seen in cases which are undeniably normal.

In the meantime, certain facts concerning the size and

shape of the uterus at a time when the placenta is known to be detached point in the direction that hæmorrhage to a moderate amount, or rather rupture of the utero-placental vessels from vascular causes, and not only from the retraction and contraction of the placental site, plays a certain though subsidiary part in the mechanism of the detachment of the placenta.

Addendum.

Since the above was written papers have appeared by Schroeder and Cohn bearing on the subject, and especially on the observations of Lemser. Further direct observations on the placenta during detachment are still needed.

Schroeder ('Der Schwangere und Kreissende Uterus,' 1886, S. 96) has investigated the course of the third stage of labour in the same way as Lemser, namely, by introducing the hand immediately after the birth of the child. He confirms Schultze's description, but remarks (p. 99) that his description is founded, not on irrefragable direct observations, but is the product of a number of significant observations and theoretical deductions.

The hand detects, he says (p. 96), one or more large protuberances arising on the inner side of the placenta, the centre of the placenta apparently bulging towards the os internum, inverting the membranes. In typical cases all the subplacental blood is contained in the membranes. It is exceptional for the edge of the placenta to descend as described by Duncan.

He give notes of seven direct observations:

(1) The hand introduced immediately after the birth of the child, felt the placenta (palpated bimanually) thicken during the first contraction of the uterus, and its lower edge and the adjacent membranes bulge. After the contraction the bulging remained, and another protuberance was felt near the middle of the placenta. The next pain made the placenta bulge still more, the hæmatoma became

thicker and extended beneath the membranes, then the placenta was depressed from the fundus and protruded into the "contraction ring" (of Bandl), with the fœtal surface inverted.

(2) A pain caused the fœtal surface to bulge; the lower edge especially became thick and protuberant. In spite of the absence of powerful pains, the placenta sank from the fundus and advanced edge first. The lower edge of the membranes then burst, and the placenta appeared at the vulva lower edge first.

(3) The placenta became raised in a fold, and descended inverted.

(4) The placenta descended inverted.

(5) Immediately after the birth of the child the placenta was found inverted, with a subplacental hæmatoma (fig. 39, S. 101).

(6) Immediately after the birth of the child the lower edge of the placenta and membranes was found bulging, and the placenta began to descend edge first. Then the part situated at the fundus bulged and became inverted.

(7) The placenta descended inverted.

Schroeder debates the question why the placenta remains undetached before the birth of the child, and becomes detached immediately afterwards. He gives two pictures of the uterine wall and placenta under these two conditions. Before the birth of the child (fig. 40, S. 102) the placenta is evenly spread along the uterine surface, and its borders slope down gradually. After the birth of the child (fig. 41, S. 103) the placenta is thicker, its edges overlap, and show evidence of shrinking of the placental site which the placenta does not at once follow, and to a certain degree of which it can accommodate itself. What keeps the placenta attached for a time is, in his opinion, the intra-uterine pressure, and the attachment of the placenta again prevents the placental site from contracting as much as the rest of the uterus. This is again evident from the lesser thickness of the placental site. After the birth of the child the intra-uterine pressure sinks, and the

placenta becomes detached. Premature detachment is liable to occur when for any reason the intra-uterine pressure suddenly falls, as in rapid evacuation of the uterus (*e. g.* hydramnios, twins, rapid delivery by turning, in which latter case asphyxia of the child often occurs). The cord still pulsates in many cases after the detachment of the placenta (S. 107). Duncan's mechanism takes place when the membranes burst early and set free the subplacental hæmatoma.

Bearing-down is generally necessary for the expulsion of the placenta.

Cohn. "Zur Physiologie und Diätetik der Nachgeburtsperiode," 'Zeits. für Geburtshülfe u. Gynäkologie,' xii Band, 2 Heft, S. 381.

Cohn (S. 386) comments on Schroeder's observations, and asserts that the contractions before the birth of the child loosen the attachment of the placenta, but not so much as to divide all the utero-placental vessels, which are still competent to maintain the circulation and provide for the respiration of the fœtus (cf. *Ruge* in Schroeder's monograph, S. 151).

He confirms (S. 390) Schroeder's observations of the thickening of the placenta immediately after the birth of the child, but without bulging.

He gives (S. 391) a direct observation:—The hand was introduced immediately after the birth of the child, and found the placenta thickened but entirely adherent.

1st pain: thickening increased, still adherent; diastole; large subplacental hæmatoma, bulging of the centre and lower border with the adjacent membranes.

2nd pain: the placenta suddenly passed into the lower uterine segment.

The patient was made to bear down, the membranes burst, and the placenta was expelled edge first (Duncan's mechanism).

It is during relaxation that the subplacental hæmatoma is formed (S. 392); subsequent contractions use this blood to separate the placenta and membranes.

(The reading of the latter part of the paper was adjourned, together with the discussion, to the next meeting.)

APRIL 6TH, 1887.

JOHN WILLIAMS, M.D., President, in the Chair.

Present—42 Fellows and 1 Visitor.

Books were presented by Dr. A. Martin and the Middlesex Hospital Staff.

Dudley W. Buxton, M.D., was admitted a Fellow of the Society.

Horace Hartley, L.R.C.P.S.Ed. (Stone); T. Grant Langhorne, M.R.C.S. (Albany, W. Australia); and Albert Rosenau, M.D. (Kissingen), were declared admitted.

The following gentlemen were elected Fellows of the Society:—R. Sidney Alexander, M.B.Lond. (Rochdale); Frederick Carden Brodie, L.R.C.P.Lond.; James Chalmers Cameron, M.D. (Montreal); John Hamilton, F.R.C.S. Ed. (Burton-on-Trent); Arthur Walton Rowe, M.D.Dur. (Margate); and Arthur Vores, M.R.C.S. (Uppingham).

The following gentlemen were proposed for election:—Milward Edmund Dovaston, M.R.C.S.; Frederic William Hewitt, M.D.Cantab.; John Talfourd Jones, M.B.Lond. (Brecon); William Thomas Law, M.D.Edin.; and Arthur Henry Mason, L.R.C.P.Lond. (Walton-on-Thames).

CASE OF DOUBLE-BODIED UTERUS.

By M. HANDFIELD-JONES, M.D.

DR. M. HANDFIELD-JONES showed a specimen of bicorporeal uterus. The history of the patient from whom the specimen had been removed was briefly as follows. She had passed safely through five confinements, in only one of which was anything abnormal noticed; in this latter (the third confinement) twins were born, one of which was a healthy full-term child, while the other fœtus had been dead apparently for a month or six weeks. The present labour had been successfully concluded, but two hours later puerperal eclampsia manifested itself and proved fatal in less than twenty-four hours.

On examining the genital tract after death it was found that the vagina presented a normal appearance, the cervix was wide and bulky and measured a little over one inch in length; with its upper margin two distinct corpora uteri were continuous. The left corpus uteri was that in which pregnancy had occurred, and presented the ordinary appearance of a full-term uterus recently emptied; the right corpus uteri was about one third the size of the left and had clearly undergone sympathetic hypertrophy due to pregnant changes in its fellow. The ovary on either side was normally situated; in the left was a corpus luteum of pregnancy. The post-uterine space was divided into two by a duplicature of peritoneum continued from the rectum forwards across the interval between the two corpora uteri to the bladder; of the two Douglas's pouches thus formed that on the left was much less deep, owing to the peritoneum having been drawn upwards by the pregnant uterus.

DR. CLEVELAND said that, as in his case no deciduous substance had been noted in previous pregnancies, so, in Dr. Hand-

field Jones's case, it was not improbable it might have been voided and escaped detection.

(See 'Obst. Trans.,' vol. xxiii, for 1881, pp. 132 and 181, and vol. xxiv for 1882, p. 297.)

Dr. Matthews Duncan noted the great hypertrophy of the unoccupied half of the uterus, analogous to the uterine hypertrophy of extra-uterine fœtation. The presence in a woman of a living ovum produced many changes by a force of which we knew nothing. To call it a trophic force was only to conceal ignorance. The bipartite or double Douglas's pouch was interesting.

ANTERIOR PERIMETRITIS AND ANTERIOR PARAMETRITIS.

By W. S. A. Griffith, M.B..

Dr. W. Griffith showed specimens of anterior perimetritis and anterior parametritis.

He believed that these specimens were unique and of great importance, giving the clue to the means for making a correct differential diagnosis between them.

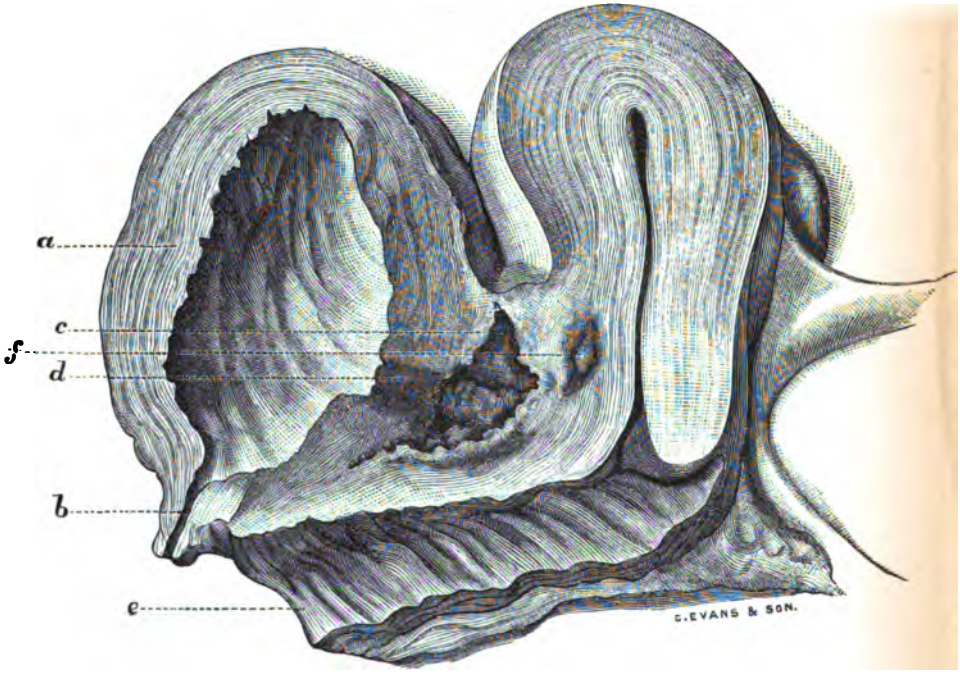
The seat of an anterior perimetritis (pelvic peritonitis) is the utero-vesical pouch, and of anterior parametritis (pelvic cellulitis) is a small mass of loose cellular tissue lying between the bladder in front and the cervix and upper part of the vagina behind, limited above by the utero-vesical fold of peritoneum, below by the parts of the bladder and vagina which are in intimate union; laterally this cellular tissue is directly continuous with the loose tissue of the broad ligaments.

The sign common to both is the presence of a tender mass of exudation felt through the anterior vaginal *cul-de-sac* in front of the uterus, the distinctive characters being that in anterior parametritis the inflammatory exudation has a tendency to pass into the broad ligament, forming a lateral tumour displacing the uterus to the opposite side, and having no tendency to form a hypogastric tumour. On the other hand, the mass of adherent bowel and other structures which enclose the intra-

peritoneal exudation of an anterior perimetritis, immediately form a considerable hypogastric tumour, which has no tendency, except in very chronic and exceptional cases, to invade the broad ligament.

Another distinctive character is the board-like hardness of the surface of the tumour formed where the cellular tissue is inflamed, and which is not met with in peritoneal inflammation.

A symptom common to both is the irritability of the bladder, and it is important in making a diagnosis, as in



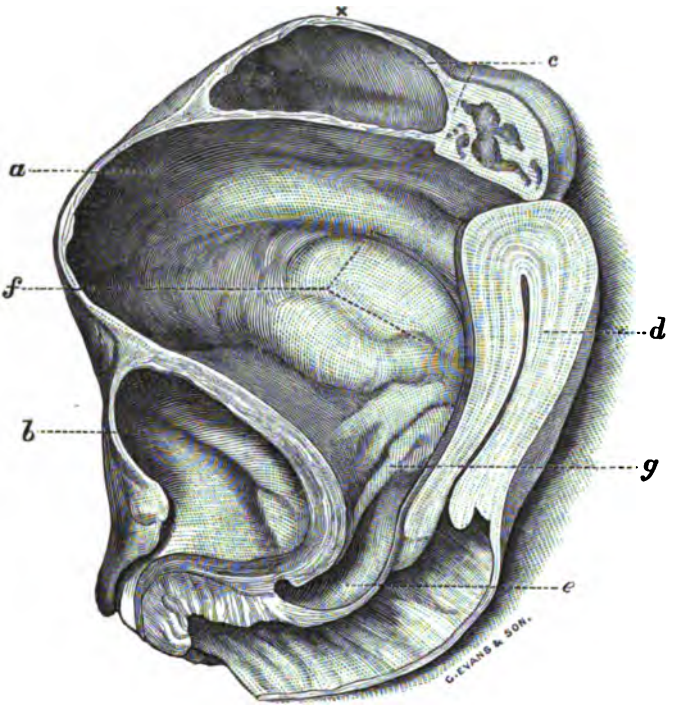
Anterior parametritis, sagittal section.

a. Bladder contracted.
b. Urethra.
c. Parametritis.
d. Communication between abscess and bladder.
e. Vagina.
f. Extension of abscess into cervix.

the case of all doubtful pelvic tumours, to eliminate the complicating physical signs of a bladder containing urine.

It is a matter of greater difficulty to distinguish between an anterior perimetritis and an inflamed ovarian cyst in this situation.

Some idea of the frequency of these diseases may be gathered from some statistics collected some time ago by Dr. Griffith. Between the years 1879 and 1884 there



Anterior perimetritis, sagittal section.

a. Abscess cavity.
b. Bladder.
c. Right ovary, cystic.
d. Uterus.
e. Extension of abscess into anterior parametric region.
f. Structures of right broad ligament laid bare.
g. Right ureter exposed.
×. Fimbriated extremity of right tube adherent at this spot.

were admitted under the care of Dr. Matthews Duncan at St. Bartholomew's Hospital 249 cases of pelvic inflammation. Of these 165 were diagnosed as perimetritis and 77 as parametritis; in 6 cases both diseases were believed to be present to a marked degree.

155 of the perimetritis cases were retro-uterine and 6 were anterior.

55 of the parametritis cases were lateral (the left side being twice as common as the right) and 9 were anterior.

Dr. HORROCKS mentioned two cases of probable cellulitis between the uterus and bladder where there was much vesical irritation and pain, although no actual disease of the bladder itself. He spoke of the great difficulty in deciding whether a case was parametritis or perimetritis, owing to the fact that the patients in the majority of cases got well.

Dr. MATTHEWS DUNCAN held that the President had very properly commented on the alleged correctness of the diagnosis of perimetric from parametric cases, and he (Dr. Matthews Duncan) would not maintain the correctness in all cases. But he had no doubt of their general correctness. Many, indeed most, peri- and para-metric cases were diagnosed by their position both when small and large, and by their relations. On this, which was a long subject, he would not now enter. The difficult cases were no doubt mostly to be found in the group when both peri- and para-metritis were held to be present. Further, many post-mortems, especially in puerperal cases, verified the general accuracy of the diagnoses.

Dr. GALABIN'S experience agreed with that of Dr. Griffith, that suppurative anterior perimetritis might closely simulate a suppurating ovarian cyst. He had met with one case in which the resemblance was not to a small or moderate-sized, but to a very large ovarian cyst, reaching as high as the stomach. A patient had been sent into Guy's Hospital under one of his surgical colleagues with a history that she had been tapped for ovarian tumour and that the fluid had re-collected. On examination there was evidently a large space containing fluid and gas, and giving a succussion splash. Dr. Galabin was disposed to think that the fluid was not contained in a cyst. At an exploratory operation, however, it was thought that there was an irremovable ovarian cyst, and the supposed cyst wall was stitched to the abdominal wound. Not long after, food began to escape through the wound soon after it had been taken. The patient died, and at the autopsy it was found that a pseudo-cyst had been formed by peritoneal adhesions, and that there was a fistulous opening into it from the stomach.

THE MECHANISM OF THE THIRD STAGE OF LABOUR.

II. *The Expulsion of the Placenta.*

By Francis H. Champneys, M.A., M.B.Oxon., F.R.C.P.,
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(Received March 31st, 1886.)

(*Abstract.*)

The author reviews the literature of the subject, including the observations of Lemser, Salin, Duncan, Schultze, Ribemont, and Ahlfeld. He shows that the question centres round the opposing views of Schultze (which are corollaries of those of Baudelocque) and those of Duncan. The difference is as to the presence or absence of hæmorrhage as part of the normal procedure, including the inversion of the placenta; this being described by Schultze and denied by Duncan. The direct observations are very few and are contradictory.

The author gives his own observations of 70 cases, carefully observed and tabulated, as regards the manner of the expulsion of the placenta and the blood lost in each case; the measures of the membranes and presenting point of the placenta are given in the table. The fœtal surface presented in 64, the maternal in 2 (in both of which the cord had probably been pulled upon), the amnion in 4. Adding his results to those of Pinard and Ribemont, the author finds that the fœtal surface presented in 127, the fœtal edge in 27, the maternal surface in 5. The presenting point was nearer the lower edge of the placenta in 65, nearer the upper edge in 1, midway in 2, no note of its position in 2. The lower edge, or amnion below the lower edge, presented in 16. In the great majority of cases a point within two inches of the edge presented, but on the fœtal surface. There was a complete absence of fundal attachments. It was found that the presenting part varies in its position with the position of the

placenta. The higher the placenta the higher the presenting point, and *vice versâ*. The average loss of blood before the expulsion of the placenta was six ounces, in the membranes or with the placenta six ounces, making an average of twelve ounces for each labour, not including post-partum hæmorrhages.

The author concludes that a moderate loss of blood is a normal phenomenon of the third stage of labour; the third stage of labour is not either actually or nearly a bloodless operation. He concludes, finally, that—

1. Some measurable hæmorrhage is a normal constituent of the phenomena of the third stage of labour.

2. The placenta presents in the great majority of cases by a point on the amniotic surface.

3. The presenting point is almost invariably near the lower edge of the placenta.

4. The position of the presenting point varies with the position of the placenta.

5. The "inversion" of the placenta is not due in the great majority of cases to traction on the cord, but is part of the natural mechanism.

These observations, therefore, accord in essentials with those of Schultze, though his diagrams are greatly exaggerated. These observations bear on the opinion previously expressed as to the causes and mode of *separation* of the placenta. Therefore,

1. It is probable that, in addition to reduction of the placental site, some escape of blood plays a part in the ordinary mechanism of placental detachment.

2. The slight inversion of the placenta, which does take place, is probably due to this cause.

3. The effusion of blood is not, in ordinary cases, sufficient to form a large mass bulging into a large uterine cavity behind the placenta.

With regard to the mechanism of the expulsion of the placenta there has been much argument and but little observation.

The phrase must be taken to mean the expulsion of the placenta from the cervix into the vagina, and not from the vagina externally.

Solayrès, in a passage already quoted, is seen to describe central separation, presentation of the insertion of the cord at the os uteri, and inversion of the placenta (p. 131).

Baudelocque, in the passage quoted in a former paper, describes his view of the detachment of the placenta at some length, but says little or nothing about its expulsion (p. 129).

Von Ritgen (S. 273) gives no personal observations on the question, but says: "Recent observations have taught us that spontaneous separation of the placenta is generally accomplished simultaneously with the birth of the child, so that usually, immediately after the birth of the child, and before the establishment of after-pains, the placenta is found lying either at or in the os uteri, with a part in the neighbourhood of its edge, and more rarely its centre, presenting."

Lemser (S. 16) says: "The fœtal surface of the placenta lay very often posteriorly at the posterior end of one or other oblique diameter. The placenta was generally folded towards the uterine surface, so that its edges lay close together, and at this place a chink covered with the membranes could be felt. This was usually the condition when the upper edge presented (forty-eight times). It was also observed that the uterine surface of the placenta was directed backwards, and the placenta was folded towards the fœtal surface. I found the latter condition several (thirteen) times when the lower edge presented; in this case the chink was not usually covered by the membranes."

Schultze (Wandtafeln) says: "A powerful after-pain drives the ovum, placenta first, together with much clotted and fluid blood, through the os uteri, and, when the subplacental clots are copious, frequently out of the external genitals."

Salin (quoted by Schultze, S. 689, and 'Cent. f. Gyn.,' 1879, No. 11, S. 278) found that in 100 cases under observation, the edge of the placenta presented at the os internum in eighty three cases; a point 2—3 cm. distant

from the edge in thirteen cases; the nearly central insertion of the cord in four cases. Of these eighty-three cases in which the edge presented, the lower edge presented in eighty-two cases, the upper in one. In the majority of these cases the placenta was folded towards the fœtal surface. Schultze remarks that these results differ considerably from Lemser's, and that the conditions were not quite natural, as the Dublin manipulation (in which the fundus is kept pressed against the child's breech) was used.

Duncan (p. 248) says: "Schultze goes a little further than Baudelocque, and actually describes the accumulated hæmorrhage from the uterine sinuses as co-operating to push down the already almost completely detached placenta and complete its separation, a view so utterly unsupported by observation and argument, and so unlikely, that I shall not say anything more regarding it." (See plates 1 and 2.)

Dr. Duncan attributes the "inversion" of the placenta to traction on the cord.

"Now, the erroneous belief that the placenta generally descends presenting its fœtal surface, seems to me to have arisen from observers not keeping in mind the very great frequency with which the natural mechanism of delivery of this cake is interfered with. I may say that it is unfortunately the rule to interfere with this part of the natural mechanism of delivery. Such interference, generally carried out as it is by pulling the cord, produces an unnatural mechanism, inversion of the placenta, as Ramsbotham calls it, and this unnatural mechanism, this inversion of the placenta, comes to be described as the natural conduct of the delivery. The placenta, says Rigby, descends into the vagina inverted, *i. e.* with its fœtal or amniotic surface turned outwards. Whether or not, he adds, this is produced by pulling on the cord, is perhaps a question."

Dr. Duncan then describes his method of "wounding or otherwise marking" the part of the placenta presenting.

"In this way it is easily discovered that the part of the placenta presenting at the os uteri, and subsequently at the os vaginæ, is not the fœtal or amniotic surface, but the edge of the placenta, or a point very near the edge. When it is not exactly the edge, the placenta is not inverted or folded upon itself, there is only a little of the lower marginal part of the cake transversely folded up, as I have depicted in the third plate; it is really the edge that presents, only thickened a little by being folded on itself; and I think this folding occurs chiefly in placentæ which are thin at the part folded. This folding is manifestly caused by the pulling up of the edge by the still adhering membranes; the resistance of the force required for their separation being greater than the rigidity of the marginal part of the placenta so folded.

"My own numerous observations satisfy me that the inversion of the placenta, or its folding upon itself transversely to the passage, or the presentation of its fœtal surface, as authors describe, and as Schultze and others depict, is a very rare occurrence, so rare as to debar describers from calling it *a* natural, and still more from calling it *the* natural mechanism. The placenta is folded on itself during the process, as I have attempted to depict in my drawing; but the folds are according to the length of the passage, not transverse to it, as inversion or presentation of the fœtal surface implies (see plate 3)."

(P. 253). "If the placenta comes edgeways, its uterine surface glides along the surface of the uterus; its foldings, parallel to the length of the maternal passages, are well squeezed together, and little space is offered for the reception of blood flowing from uterine sinuses. The uterine wall keeps close to the folded placenta. The uterus contracts, forces the placenta downwards, and at last its body is nearly globular and empty. There is no hæmorrhage worthy of the name. Hæmorrhage, when it does occur, is not demonstrated to take place according to the description of Baudelocque or the plate of Schultze; and I believe these gentlemen do not give the correct account

of it. Authors too frequently, I may say almost invariably, describe too great an amount of hæmorrhage as part of the natural process. I admit that the frequency of some hæmorrhage is a strong argument in favour of this proceeding. But I believe that interference, which, though common, is frequently injudicious, is occasionally the cause of this hæmorrhage, which is, therefore, in such circumstances, unjustly laid to the account of the natural mechanism. It is far from uncommon to observe labours in which there is no hæmorrhage, in which not an ounce of blood is lost during delivery, there being only enough to smear the uterine surface of the placenta with a very thin layer. This absence of hæmorrhage I regard as the natural state, and in this I suppose all obstetricians will join me, at least if I introduce the element of desirableness as an indication of naturalness. Such absence of hæmorrhage depends on the adoption of what I describe as the natural mechanism. The presence of hæmorrhage is a part of the erroneously described natural mechanism, and to me this presence is one proof of the erroneousness of the description."

Dr. Duncan goes on to say that the mechanism of Baudelocque and the picture of Schultze give the disordered mechanism produced by pulling on the cord.

Schultze ('Deutsche med. Woch.' S. 677) defends his views and diagrams against their assailants, chiefly Duncan and Credé.

"In fig. 3 of plate 16 a part of the placenta near the lower edge lies over the os uteri, perhaps the edge itself presents, for the effusion of blood from the placental site is represented as still persisting. In fig. 4, after the lower edge of the placenta has occupied the right vaginal fornix, the opposite edge of the placenta, which was originally uppermost, is already leaving the os uteri, and the whole placenta fills the vaginal fornix in the way in which the examining finger usually finds it at this time. The placenta, which usually presents at the os uteri by a segment of its edge, or a spot near the edge, passes

through the os folded either lengthways or in some other manner, in the vaginal fornix it usually turns its broad fœtal surface downwards."

Schultze criticises Duncan's description, especially as regards his statement that the absence of hæmorrhage is "desirable," regarding it as more scientific to consider that best which seems best to nature. He acknowledges the correctness of Duncan's description—for some cases. As regards the amount of hæmorrhage, he thinks Duncan underrates it, and that not more than 150 to 200 grains (5 to 6 ounces) of blood would be required to fill the subplacental space in his figures 1 and 2, a quantity which he considers below the average. Schultze then refers to Lemser's observations, particularly to the greater frequency with which the placenta was folded towards the uterine surface (*i. e.* leaving a subplacental space), especially when the upper edge presented. He also remarks the folding of the placenta towards the fœtal surface (in a much smaller number of cases), when the lower edge presented. The more frequent arrangement implies a subplacental space. He draws diagrams of imaginary horizontal sections of the uterus to illustrate Lemser's description. The subplacental space, when it exists, is both the cause and the result of hæmorrhage; the result, because in many cases the hæmorrhage inverts the placenta; the cause, because if the placenta becomes inverted a space is produced which must be filled with blood. Schultze states (S. 689) that the conditions set forth in his description are, so far as actual observations of the spontaneous course of labour are concerned, commoner than those described by Duncan; he also remarks on the disturbance produced by the Dublin manipulation. He then remarks on the observations of Salin, which differ much from those of Lemser, perhaps on the above account. He regards the Dublin method as excellent, though he thinks it disturbs the natural course of events, as described by himself and by Lemser, and he does not teach its use to midwives.

Ribemont (p. 43), after referring to the opinions and

observations of others, describes some observations made specially by Pinard at the Lariboisière Hospital of Paris, and some of his own at the Tenon Hospital. Neither traction nor expression were employed in any of the cases. The presenting part of the placenta was nipped by a forceps which was left *in situ* and examined after expulsion of the placenta.

	Pinard's results.	Ribemont's results.	Total.
Fœtal surface presented	= 51	= 12	= 63
Fœtal edge „	= 7	= 4	= 11
Uterine surface „	= 2	= 1	= 3

Ribemont then discusses the causes and mode of detach- of the placenta; his remarks have been quoted in dealing with that part of the subject.

Ahlfeld (S. 58) says: "Schultze is right in pointing out that it is impossible to deduce from the position of the placenta in the vagina, and during its expulsion from the vulva, the mode in which it has passed through the os uteri into the vagina. With the exception of Lemser's investigations we have as yet no actual account of the manner in which the placenta is born, and are obliged to trust to these researches alone and to theoretical conclusions.

"It is evident that there is, and can be, no universal mechanism; the position of the placenta, the firmness of its peripheral attachment, the size of the hæmatoma, the position of the hole in the membranes, &c., determine the mechanism of its expulsion. We must, however, in connection with the processes concerned in its detachment, regard the inversion of the placenta by the hæmatoma as the most important element in the mechanism of its expulsion, since the placenta usually occupies the uterine body, especially its anterior or posterior wall, but the expelling forces drive its contents, not towards the centre of the uterine cavity, but in the direction of least resistance, *i. e.* towards the os uteri; most frequently a part of the placenta situated between its lower edge and centre,

will first present at the os uteri. Should, however, the attachment of the lower edge of the placenta by means of the membranes yield to the pressure of the hæmatoma, the edge itself would be driven down. The centre of the amniotic side of the placenta could only present in the centre of the os uteri in cases in which the placenta had occupied the fundus exactly, and the hæmatoma had inverted it exactly in the centre."

The whole contest will be seen to centre round the views of Schultze (which are corollaries of those of Baudelocque) and those of Duncan.

In Schultze's opinion—

(1) Some hæmorrhage is a normal constituent of the phenomena of the third stage of labour.

(2) "Inversion" of the placenta, that is a degree of folding, so that the amniotic side is convex, and presents at the os uteri, is also one of the ordinary phenomena.

(3) This "subplacental hæmatoma" aids in the expulsion of the after-birth.

In Duncan's opinion—

(1) Hæmorrhage is not an essential constituent of the phenomena of the third stage of labour; it is under normal conditions trifling or absent; in the "ideal" state there is or would be *none*.

(2) "Inversion" of the placenta does not normally take place; when it is found it is probably due to traction on the cord.

(3) Bleeding, when it does take place, is an accident and subserves no useful purpose.

Dr. Duncan, as we have elsewhere observed, accepts the mode of expulsion of the placenta as a test of the mode of its separation and of the whole mechanism of the third stage of labour. If the mechanism of the expulsion of the after-birth follows the course he describes in the majority of cases which are undeniably normal, well and good; if not, *i. e.* if an appreciable amount of hæmorrhage takes place, if the placenta presents "inverted" at the os uteri, if it presents not by its edge but by a point of

varying remoteness from the edge and on the amniotic surface of the placenta, then (he says) "*cadit quæstio.*"

The question, therefore, is one of fact and of direct observation. Dr. Duncan has not published his experiments, and they cannot therefore be criticised, but it must be observed that his views are not confirmed by the direct and independent observations of Pinard and Ribemont quoted above. Lemser's observations confirm the manner of folding implying a subplacental space, but his description of the relative frequency of presentation of the upper and lower edge of the placenta (the upper edge oftener than the lower) is so extraordinary, and involves so complicated a somersault on the part of the placenta as the ordinary mechanism, that I can make nothing of it. Salin's observations in the original I have not been able to see; according to them, the edge presented oftener than any other part, the lower edge in eighty-two cases, the upper edge in one. In the majority of cases the placenta was folded towards the fœtal surface. I cannot explain this discrepancy; perhaps Schultze is right in his suggestion that the management of the third stage of labour may have something to do with it.

It may be added that the majority of writers adopt Duncan's views, but that the above are all the direct observations that I have been able to discover.

The following inquiry was undertaken at the General Lying-in Hospital with a view to settling the question. The very careful notes of the cases at this time are by Dr. Robert Boxall, then house physician.

First, neither Credé's method nor the Dublin method was used. After the birth of the child, the hand was simply laid on the uterus to observe its behaviour; the uterus was not in ordinary cases rubbed or kneaded, or pushed downwards. Particular attention was paid to this point. The cord was never pulled upon.

Immediately after the birth of the child a vaginal exa-

mination was made, and as soon as the placenta could be felt in the cervix it was marked.

A catch forceps was at first tried, but it would not always hold, and got in the way. Eventually the presenting part of the placenta was stained with Eosin by a tampon through a cannula, producing an indelible mark. The various measures set forth in the table were taken after its expulsion. The blood lost before the expulsion of the placenta, and also that discharged with the placenta or in the membranes, was carefully noted.

Seventy cases in all were noted.

Mode of Presentation of Placenta.

The fœtal surface presented in . .	64
The maternal „ „ . . .	2
The amnion „ „ . . .	4
	70

The two cases in which the placenta presented by the *maternal surface* deserve attention. These were altogether exceptional numerically, and *in both of them there was evidence of traction on the cord,* as seen in the table.

In the cases in which the fœtal surface presented the cord was not pulled upon.

We will now add my results to those of Pinard and Ribemont mentioned above:

	Pinard.	Ribemont.	Champneys.	Total.
Fœtal surface presented	51	12	64	127
Fœtal edge „	7	4	16	27
Uterine surface „	2	1	2	5

The presenting point (the stain) was in my cases

Nearer the lower edge of the placenta in .	65
Nearer the upper „ „ . .	1
Midway between the upper and lower edge in .	2
No note	2
	70

The lower edge, or amnion below the lower edge presented in 16

The distances of the presenting point from the lower edge were as follows:

¼	inch	in	3 cases.
½	,,	8	,,
¾	,,	5	,,
1	,,	8	,,
1¼	,,	5	,,
1½	,,	5	,,
1¾	,,	1	,,
2	,,	8	,,
		43	

2¼	inches	in	1 case.
2½	,,	3	cases.
2¾	,,	2	,,
3	,,	2	,,
3¼	,,	0	,,
3½	,,	2	,,
		10	

It will be seen that in the great majority of cases a point within two inches of the edge presented, but that the fœtal surface and not the maternal presented. The folding was therefore not in accordance with that described by Duncan, but, so far, with that described by Schultze.

A further inquiry suggested itself, viz. to see whether any relation existed between the point of the placenta which presented and the position of the placenta *in utero*; in other words, whether the point presenting were nearer the edge in low positions of the placenta than in those more elevated.

If such a relation existed, it would, so far, be an argument in favour of a change of position of the placenta during its descent, so that the part which presented would be a part near to the point occupied by the axis of the uterine cavity, *i. e.* the line of least resistance.

Such a result would tell against the view set forth by Duncan and generally adopted, and would fit in with the view by which the placenta is somewhat inverted in its descent.

On glancing at the table no such result is at once apparent, but, in connection with this, a fact must be

noticed, viz. that the differences between the figures in column C (the least distance from the edge of the placenta to the edge of the hole in the membranes) and column D (the greatest corresponding distances) show plainly a *complete absence of "fundal insertions;"* the differences, therefore, between higher and lower insertions are, at most, very small, and small differences are all that we can expect.

I have put all the cases in three groups: (1) in which the presenting point was situated within one inch of the lower edge of the placenta; (2) between one and two inches; (3) between two and three inches, and have taken the averages. The results are as follows:

	*A in.	B in.	C in.	D in.
(1) Presenting part of placenta within 1 in. of its lower edge (23 cases) . .	¾	6	3½	14
(2) Presenting part of placenta between 1 and 2 in. of its lower edge (19 cases)	1¾	5½	4	14
(3) Presenting part of placenta between 2 and 3½ in. of its lower edge (9 cases) .	2¾	4	5¼	15

It will be seen that a steady increase is noted in column C, which represents the lowest part of the placenta.

In other words, *the presenting part varied in its position with the position of the placenta. The higher the placenta, the higher the presenting point, and vice versâ.*

This mode of presentation cannot be accounted for by resistance to the detachment of the membranes hitching up the *lower* edge of the placenta, as Dr. Duncan infers, for the upper edge would find the same obstacle (resistance to the detachment of the membranes) to its descent.

If we reverse our order and group the cases according to the situation of the placenta in three groups: (1) those

* For the meaning of A, B, C, D, see Table, p. 169, and Fig., p. 165.

in which the lower edge of the placenta was within two inches of the hole in the membranes; (2) in which it was between two and four inches; (3) in which it was above four inches, and take the averages, we get—

	C in.	D in.	A in.	B in.
(1) Lower edge of placenta within 2 in. of hole in membranes (17 cases) . . .	1½	13	¾	6
(2) Lower edge of placenta between 2 and 4 in. from hole in membranes (17 cases) .	3½	14½	1¼	5½
(3) Lower edge of placenta above 4 in. from hole in membranes (23 cases) . . .	6	14½	1½	5

This confirms the former result, and shows that *the presenting part varies in its position with the position of the placenta.*

This, as we have explained, tells against the views of Duncan.

It is to be observed, however, that (1) the presenting part of the placenta was very near the edge, (2) the lower edge of the placenta was very near the hole in the membranes in a great majority of cases.

This may be represented tabularly as follows:

(1) The presenting part of the placenta was within one inch of the lower edge of the placenta in 23 = 46 per cent. of the cases examined.

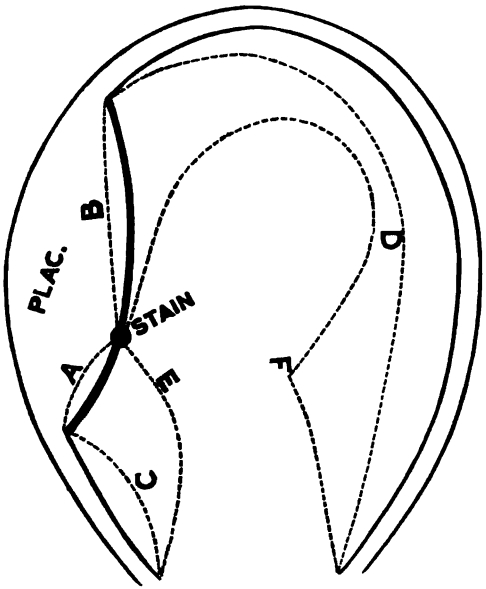
(2) The presenting part of the placenta was within two inches of its lower edge in 42 = 84 per cent. of the cases examined.

(3) The presenting part of the placenta was within three and a half inches of its lower edge in 51 = 100 per cent. of the cases examined.

(1) The lower edge of the placenta was within two inches of the hole in the membranes in 17 = 30 per cent. of the cases examined.

(2) The lower edge of the placenta was within four inches of the hole in the membranes in 34 = 60 per cent. of the cases examined.

(3) The lower edge of the placenta* was above four inches of the hole in the membranes in 23 = 40 per cent. of the cases examined.



E = A + C; F = B + D.
A : B :: C : D & E : F.

Diagram showing position of placenta *in situ* and the point in it which ultimately presented. Figures as in Table.

A glance at columns E and F in the Table, p. 169, shows the position of the part of the placenta which ultimately presented in the uterus before detachment and expulsion. Column E is the sum of columns A and C; column F is the sum of columns B and D.

A possible source of error must here be noted. The

* Not exceeding 5 inches in 11; not exceeding 6 inches in 19; not exceeding 7 inches in 23; not exceeding 8 inches in 24; not exceeding 9 inches in 25; none exceeded 9 inches.

position of the placenta *in utero* has been inferred from its distance from the hole in the membranes. It is, however, known that the bag does not always rupture at its lowest point, but sometimes at some distance from it. This being the only method which we at present possess, it has been utilised for the present inquiry. It will be observed that if all deductions drawn from it on the present occasion were erased the main arguments would remain unimpaired.

It remains for us to consider the question of *hæmorrhage.*

The amount is seen to vary very greatly. The least quantity lost was three ounces (Case 55); from this the quantity varied, up to quite a considerable loss (thirty-eight ounces, Case 49).

The average loss before the expulsion of the placenta was *six ounces.*

The average loss in the membranes or with the placenta was *six ounces.*

The average loss in any one labour during the third stage, *i. e.* until the completion of the birth of the placenta, was *twelve ounces.* This does not include post-partum hæmorrhages.

This quantity is too large to be disregarded.

We conclude that a *moderate loss of blood is a normal phenomenon of the third stage of labour. The third stage of labour is not either actually or nearly a bloodless operation.*

We have already stated our view, that the *ideal* third stage would *not* be bloodless.

The amount of hæmorrhage in cases in which the *edge* presented will be seen to vary greatly. It is not, therefore, the rule for more blood to escape before the expulsion of the placenta in these than in other cases.

To sum up:

1. Some measurable hæmorrhage is a normal constituent of the phenomena of the third stage of labour.

2. The presenting point is almost invariably near the lower edge of the placenta.

3. The placenta presents in the great majority of cases by a point on the amniotic surface.

4. The position of the presenting point varies with the position of the placenta; the higher the placenta the more remote from its lower edge is the presenting point of the placenta, and *vice versâ*.

5. The "inversion" of the placenta is not due in the great majority of cases to traction on the cord, but is part of the natural mechanism. It is, however, not proved to be more than inversion of the lower edge. Complete inversion with central presentation at the os uteri is very rare (see table).

Our observations, therefore, accord in essentials with those of Schultze. We must, however, add that his diagrams seem to us greatly exaggerated. In our opinion it would take a great deal more than six or even twelve ounces of blood to produce the hæmatoma which he figures. The amount may be calculated as that necessary to fill a nearly globular space, twelve inches (twice the breadth of the placenta) in circumference, which I have found by rough experiment (by filling a thin india-rubber air-ball with water) to hold seventeen ounces. Still, we hold it as proved that a certain degree of inversion does take place, and we can see no escape from the necessity of connecting this with the moderate average bleeding which we have shown to take place.

As we have said above, the question of the separation of the placenta is indissolubly connected with that of its expulsion. The presence of hæmorrhage in connection with expulsion being proved, it can hardly be excluded from the consideration of the process of separation.

In addition to this, the facts which we know concerning the size and shape of the uterus almost immediately after the birth of the child—when we know the placenta to be already separated—speak, to our mind, eloquently, for a moderate amount of bleeding.

Finally—

(1) It is probable that, in addition to reduction of the

placental site, some escape of blood plays a part in the ordinary mechanism of placental detachment.

(2) The slight inversion of the placenta which does take place is probably due to this cause.

(3) The effusion of blood is not, in ordinary cases, sufficient to form a large mass bulging into a large uterine cavity behind the placenta.

As regards the mechanical advantage of edgewise presentation of the placenta, of which anyone can convince himself by passing one through the various rings of a retort-stand ('Obst. Trans.,' vol. xxv, for 1883, p. 160), it must be remembered that the cervix has just been dilated to a diameter of some four inches, a size which will allow a placenta to pass in any way it chooses.

The description of Schultze (quoted above) of the way in which the placenta passes through the cervix into the vagina essentially agrees with our own experience.

Mode of Expulsion of Placenta.

No.	Hosp. No.	Date of admission.	Surface stained.	Stain nearer upper or lower edge of placenta.	A. Least distance from stain to edge of placenta.	B. Greatest distance from stain to edge of placenta.	C. Least distance from edge of placenta to hole in membranes.	D. Greatest distance from edge of placenta to hole in membranes.	E. Least distance from stain to edge of hole in membranes.	F. Greatest distance from stain to edge of hole in membranes.	Blood lost before expulsion of placenta (clots or fluid).	Blood in membranes or with placenta.
					Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Oz.	Oz.
1	8	Jan. 7, 1884	Fœtal	Lower	1⅜	5½	1	11	2½	16½	—	3
2	11	„ 1, 1884	„	„	2	3½	5	10	7	13½	—	—
3	12	„ 13, 1884	„	„	1½	6½	1	11	2½	17½	—	6
4	13	„ 13, 1884	„	„	2	4½	5	12	7	16½	—	6
5	14	„ 13, 1884	„	„	1	6	Membranes very much torn				—	10
6	15	„ 14, 1884	„	„	¼	4¾	5	11	5¾	15¾	—	4
7	16	„ 17, 1884	„	„	¼ (edge)	5¾	1	11	1¼	16¾	—	3
8	97	May 14, 1884	„	„	2½	3½	5½	11	8	14½	21 (chiefly clots)	10 (chiefly clots)
9	107	„ 26, 1884	„	„	1½	5¾	1	13½	2½	19½	2	3 (chiefly clots)
10	109	„ 26, 1884	„	„	¼ (edge)	6¾	0	10	¼	16¾	11 (chiefly clots)	3 (fluid)
11	121	June 10, 1884	„	„	0 (edge & amnion)	6½	1	12	1	18½	14 (clots)	17 (clots & fluid)
12	125	„ 17, 1884	Amnion	„	1 (below edge)	7½ to upper edge	1	13	0	20½	2	2
13	130	„ 20, 1884	Fœtal	„	1	5½	3	10	4	15½	—	5 (fluid)
14	131	„ 21, 1884	Amnion	„	½ (below)	10½ to upper edge	5	11	4½	21½	3 (fluid)	7
15	133	„ 22, 1884	„	„	„	7 to upper edge	4	15	3½	22	—	9
16	136	„ 27, 1884	Fœtal	„	½	6½	4	12	4½	18½	2½	7
17	137	„ 28, 1884	Fœtal & amnion	„	0 (edge)	7	1	14	1	21	17 (fluid)	7 (partly clot)
18	144	July 3, 1884	Fœtal	„	½	6	1½	11	2	17	—	6
19	155	„ 11, 1884	„	Upper	¼	6¼	2	12	8¼	12¼	—	16 (in membrane partly clotted)
20	159	„ 15, 1884	„	Lower	½	6½	1½	13	2	19½	13	3 (chiefly clots)
21	161	„ 18, 1884	„ (insertion of cord)	„	1	5	2	12	3	17	2	8

No.	Hosp. No.	Date of admission.	Surface stained.	Stain nearer upper or lower edge of placenta.	A. Least distance from stain to edge of placenta.	B. Greatest distance from stain to edge of placenta.	C. Least distance from edge of placenta to hole in membranes.	D. Greatest distance from edge of placenta to hole in membranes.	E. Least distance from stain to edge of hole in membranes.	F. Greatest distance from stain to edge of hole in membranes.	Blood lost before expulsion of placenta (clots or fluid).	Blood in membranes or with placenta.
					Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Oz.	Oz.
22	162	July 18, 1884	Fœtal	Lower	½ (edge & amnion)	7	3	14	3½	21	2	3
23	167	„ 24, 1884	„	„	0 (edge & amnion)	6½	0	14	0	20½	1	4
24	169	„ 26, 1884	„ (edge and amnion)	„	0 (edge)	6½	4	14	4	20½	16	19 (some clots)
25	180	Aug. 8, 1884	Fœtal	„	1	6	3	13	4	19	7	8
26	187	„ 10, 1884	„	Midway	3½	3½	3	11	6½	14½	9½	1½
27	196	„ 23, 1884	„	Lower	2½	5	4	19	6½	24	4 (fluid)	6 (some clots)
28	197	„ 24, 1884	„	„	1	6½	3	16	4	22½	6 (fluid)	5 (some clots)
29	198	„ 25, 1884	„	„ (nearly midway)	3	4	6	12	9	16	—	—
30	201	„ 26, 1884	„	Lower	¾	5¾	2	14	2¾	19¾	—	4
31	205	„ 30, 1884	„	„	2	4½	3	15	5	19½	—	8 (clots and fluid in membranes pp. hæm.)
32	211	Sept. 6, 1884	„	„	1½	6	3	14	4½	20½	3 (some clots)	1 (some clots)
33	216	„ 8, 1884	„	„	2¾	5¼	Membranes very much torn				7 (clots & fluid)	11 (clots & fluid)
34	236	„ 29, 1884	„	„	2	5	4	10	6	15	14 „	18 „
35	240	Oct. 2, 1884	„	„	2¼	4¾	5	16	7¼	20¾	8 „	3 (fluid)
36	242	„ 5, 1884	„	„	2	5	5	14	7	19	8 „	1 (clots)
37	244	„ 7, 1884	„	„	1	6	6	16	7	22	8 „	4 (fluid)
38	245	„ 8, 1884	„	„	1½	5½	4	15	5½	20½	4 (fluid)	4 (clots & fluid)
39	250	„ 10, 1884	„	„	1½	6½	2	16	3½	22½	6 (clots & fluid)	8 „
40	253	„ 14, 1884	„	„	1½	5½	5	16	6½	21½	1½ „	8 „
41	255	„ 16, 1884	„	„	¾	5¼	6	19	6¾	24¼	4 „	2 „
42	256	„ 16, 1884	„	„	1¼	6¼	5	14½	6¼	20¾	—	14 (many clots)
43	260	„ 18, 1884	„	„	1½	5½	4	19	5½	24½	7 (clots & fluid)	—
44	261	„ 19, 1884	„	„	¾	5½	4	17	4¾	22½	—	6½ (clots & fluid)

45	262	„ 20, 1884		„	1	6	4	17	5	23	1 (fluid)	4	„
46	266	„ 28, 1884	Amnion	„	½ below	6 to upper border	2	17	1½	23½	9 (clots & fluid)	5	„
47	269	„ 31, 1884	Fœtal	„	½	6½	5½	12	6	18½	1 (fluid)	5	„
48	270	„ 31, 1884	„	„	1	5	3	19	4	24	—	4 (fluid)	
49	272	Nov. 1, 1884	„	„	1	5½	Membranes very much torn				17 (clots & fluid)	21	
50	275	„ 4, 1884	„	„	½	6½	4	17	4½	23½	6 „	—	
51	277	„ 6, 1884	„	„	0 (edge)	6½	5	17	5	23½	4 „	16 (clots & fluid)	
52	280	„ 8, 1884	Fœtal	„	½	5½	6	13	6½	18½	1 (fluid)	5	„
53	282	„ 8, 1884	„	„	0 (edge)	6	1½	19	1½	25	4 (clots & fluid)	8	„
54	283	„ 10, 1884	Fœtal	„	¼	6¼	1	17	1¼	23¼	—	2 (clots)	
55	287	„ 15, 1884	„	„	2	5	6	13	8	18	1	2	
56	289	„ 21, 1884	„	„	2	5	7	15	9	20	—	6 (clots & fluid)	
57	290	„ 22, 1884	„ & amnion	„	0 (edge)	8	7	16	7	24	24 (some clots)	6 (some clots)	
58	295	„ 26, 1884	Fœtal, edge	„	0 „	6	3½	13	3½	19	13 (clots & fluid)	5 (clots & fluid)	
59	297	„ 27, 1884	Fœtal	„	3	3½	7	16	10	19½	2 (fluid)	2 (fluid)	
60	298	„ 27, 1884	„	„	1½	6	8	13	9½	19	3 (clots & fluid)	11 (clots & fluid)	
61	300	Dec. 2, 1884	„	Midway	3½	3½	7	17	10½	20½	Large gush of water		
62	302	„ 2, 1884	„	Lower	2¾	4¼	5	15	7¾	19½	12 (chiefly clots)	6 (clots & fluid)	
63	303	„ 4, 1884	„ edge	„	0 (edge)	5½	9	15	9	20½	5 (clots & fluid)	1	
64	304	„ 4, 1884	Fœtal	„	2	5½	3	15	5	20½	3 „	2 (fluid)	
65	315	„ 17, 1884	„	„	1½	5¾	6	14	7½	19¾	10 „	4 (clots & fluid)	
66	316	„ 18, 1884	„	„	2½	4½	5	17	7½	21½	1	5 (clot)	
67	278	Nov. 2, 1884	„	No note	½	3½	No note	No note	No note	No note	6 (clots & fluid)	4 (fluid)	
68	291	„ 23, 1884	„	„	½	5½	„	„	„	„	1	3	
69	259	Oct. 18, 1884	Maternal	Lower	2 (about)	4½ (about)	3½ (about)	16½ (about)	5½ (about)	24½ (about)	3 (clots)	5 (clots & fluid)	
			(Cord twice round neck very tight, slipped over head; placenta much pulled upon. Clots immediately followed birth of child, and on inserting fingers to stain placenta, several clots, together with uterine surface of placenta opposite insertion of cord, were found to be presenting)										
70	269	„ 31, 1884	Maternal	Lower	Could not be stained						1 (fluid)	5 (clots & fluid)	
			(Cord appears to have been pulled upon; length of cord 14 inches)										

Discussion on Dr. Champneys' two papers, one of which was read at the last meeting.

Dr. Matthews Duncan congratulated the Society on the elaborate papers just read, not only on account of their intrinsic value, but also because of their bringing the Society into contributing to the progress of the greatest obstetric work of the century. In the history of midwifery there were only three works of the very highest class as yet achieved; and of these the two greatest were anatomical. The first in scientific order of progress was done in the eighteenth century and was connected with the name of W. Hunter, whose plates of the anatomy of pregnancy were its crown. The second was a work mainly of this century, and was known as the mechanism of parturition, and with it were connected many names, especially those of Solayrés and Naegele. The third was still incomplete, the greatest, most difficult, and most glorious of all, a work of the nineteenth century, the anatomy of labour. In this country no name was so great in the anatomy of labour as that of Barbour; and he was actively engaged in it at this moment. To it no contribution had come from London, and the papers of Dr. Champneys he hailed as worthily bringing a part of it before the Society. The anatomy of labour made no progress till the introduction of homolographic sections of frozen bodies. No such section of pregnant women had been done in London, and nowhere had any such sections been done in the third stage of labour, the subject now before the Society. The other stages of labour had been illustrated and advanced by sectional anatomy, not as yet the third; but he did not doubt that the zeal of obstetricians would be rewarded by finding bodies suitable for such sections, and that the grand subject of the anatomy of labour would be completed, perhaps late in this century. The work of Dr. Champneys was mainly physiological, and should in scientific order come after the completion of the anatomy of the third stage. But Dr. Champneys was only to be commended for pursuing his work without waiting for such theoretically previous anatomical completion. Yet the subject of Dr. Champneys' work, the separation and expulsion of the placenta, would not be finally settled till the anatomy was settled and finished. Failing to find bodies for the sectional anatomy of the third stage, obstetricians had with keen eye snatched the uteri of the novel operation of Porro. This was a very imperfect substitute for frozen sections, and might, for evident reasons, be very misleading; but it yielded great new facts which had a distinct place in such inquiries as those of Champneys. The Porro uteri, one especially of Dr. Barbour's, showed that the placental area might be contracted to a diameter of four inches without separation; and the absence in these cases of the hæmatoma of Schultze and of Champneys

and of Schroeder, was distinctly and forcibly hostile to the theory of separation by utero-placental hæmorrhage or hæmatoma; yet it did not disprove it. Absence of separation with contraction to an area of four inches in diameter, seemed to astonish many, and to favour the detrusion theory of separation. He (Dr. Matthews Duncan) did not think so, and he had always imagined a much greater contraction as necessary for separation. The extensive subject of utero-placental hæmorrhage or hæmatoma, in connection with its supposed function in separating the placenta, he (Dr. Matthews Duncan) would not enter upon, satisfying himself meantime with remarking that its discovery, as described by Schroeder, was not evidence that it caused separation; it might be a consequence. Besides, the diagnosis of a hæmatoma by feeling the placenta in the course of the third stage was one on which much doubt might justly rest. He might mention a theory of the separation which Dr. Champneys did not know, that of Dr. Berry Hart, who had not as yet published his researches and views on this matter. This original investigator held that the separation was by uterine expansion. He, indeed, applied the presently accepted theory of separation in placenta prævia to separation in natural labour; and, while doubting his power to demonstrate this thesis, he would wait for the publication of Dr. Hart's work without further comment at present. He begged to make some remarks on his own paper of 1871 which, considering the many elaborate works published since, was a matter of "ancient history." It had commanded extensive acquiescence and had at least, like a pebble thrown into a pool, caused an ever-widening series of intellectual waves of which Champneys' papers were part. His paper would not be praiseworthy at this date, now that the subject had been so greatly worked up; yet, admitting its imperfection and comparative inexactness, he adhered to its main facts. And he was still an unbeliever in the presence of hæmatoma in a natural separation in a theoretically natural case; even the examination of secundines after delivery negatived that. Again, he continued to hold that the cake descended edgewise, often having, according to his plate, the edge tucked up; and he referred to the columns A and B of Dr. Champneys' second paper as confirming this view. Of course his statements only referred to the passage through the cervix, not to the placenta after it had entered the vagina. He (Dr. Matthews Duncan) held that any theory of placental separation might naturally be expected to accord with the facts of the separation of the decidua in a case of miscarriage of a healthy ovum, say in the second month. Now, in such separation he could see no room for the hæmatoma theory nor for that of detrusion. He would remind the Society of interesting facts in this department, especially the partial separation of the decidua near the internal os in cases of sudden death in extra-

uterine fœtation. The old detrusion theory of separation, of Ruysch, he had thought much of, and he found it difficult to make it acceptable or even intelligible; and he thought the Porro observations of Barbour and others decidedly hostile to it. He could not understand the production of detrusion till after separation. A Porro example had been recently exhibited by Dr. Galabin, in which the lowest part of the cake had been separated; and this had been held as evidence of detrusion. Now, he held that it was hostile to the detrusion theory, for he could not imagine detrusion pushing off the lowest flap without pushing off all above it. How could the lowest part be propelled by a part above, which was itself not moved.

Dr. GALABIN thought that without more complete study it was impossible fully to criticise the arguments and observations contained in Dr. Champneys' important papers, and he could only venture to touch upon a few points. As to the separation of the placenta, he understood that the author had not come to a decided opinion whether the order of separation was from the periphery to an internal point near the centre, or from an internal point to the periphery. Dr. Galabin thought that it was certain *a priori* that this must depend on the cause of separation. If the cause were shrinking of the placental site, separation must be from the periphery to an internal point, not necessarily the absolute centre, if there were any unusual firmness of attachment. For, consider the state of things when the placenta is under strain from shrinking of its attachment, without any actual separation, as in the Porro uterus. Any small element of area at an internal point is supported within and without by adjacent portions, and is subjected only to the small strain generated upon its own area, that is to say to the difference between the strain it receives from the area within and the somewhat increased strain which it transmits to the area without. At some central point of equilibrium there is no strain. But the outermost area is subjected to the accumulated strain acquired from the centre to the periphery, and has nothing outside to support it. The margin must therefore give way first, and each area in turn as it successively becomes the outermost. On the other hand, if hæmorrhage is a cause of separation, it appears that it can only be effectual if it occurs at other parts away from the margin, and if the margin is more firmly attached than other parts, so that the blood is retained till it has separated the main part of the surface. Blood effused at the margin would only escape without separating the rest of the placenta. This cause then would effect a separation from the centre toward the periphery, and it was difficult to see how it could act as subsidiary to a cause effecting separation from the periphery to the centre. He did not think that the author had adduced any evidence in support of the proposition of his first paper, namely, that hæmorrhage plays a certain though

subsidiary part in the causation of detachment. For if it be admitted that there is normally an effusion of blood, and that the placenta is expelled in such a way as to imply such an effusion, this does not at all prove that the hæmorrhage is the cause rather than the consequence of detachment. There was normally some hæmorrhage after both detachment and expulsion, and the primary hæmorrhage might easily be the consequence of detachment as well as the secondary. He thought that the Porro uterus was in favour of the view that shrinking of the placental site, with possibly detrusion in addition, was the cause of detachment, and not hæmorrhage. The interference with the uterus in Porro's operation would not cause insufficient hæmorrhage, unless an elastic ligature were placed round the neck of the uterus, but it would obviously cause insufficient shrinking and detrusion, and thus the placenta remaining attached in the Porro uterus was not surprising, if these were the causes of detachment. The eversion of the placental site, due to shrinking of the outer layer of fibres, while the shrinking of the inner layer was hindered by the still attached placenta, accounted for the flattening of the Porro uterus compared with the uterus observed during life, and it was not necessary to suppose that the latter need contain any large quantity of blood. He thought that the Porro uterus which he had shown at the last meeting, in which there was partial detachment of the placenta at its margin, not all round, but at the lower part, tended to show that detrusion was an element in the causation as well as shrinking. For detrusion, acting as a supplementary cause to shrinking, would cause detachment at the lower margin first, provided that the placenta were already so compressed by the shrinking that the detrusive force pressed it down as a whole. As regards the mechanism of expulsion he thought the observations recorded by Dr. Champneys were of great interest in showing what was the mode of expulsion when the third stage was managed in the way described. But what appeared most manifestly from these observations and the others quoted was that the mode of expulsion varied extremely according to the circumstances of the case. In Salin's cases the placenta generally presented at the os by its lower margin, as described by Duncan, and there was no inversion. In Champneys' cases there was a partial degree of inversion. In the great majority of Lemser's cases the placenta presented by the upper edge, that is there was complete inversion of the sac formed by placenta with membranes. Although it did not appear in the paper, it was probable that the reason of this was that the management of Salin's cases promoted the best contraction of the uterus, that of Lemser's the greatest relaxation, that of Champneys an intermediate condition. He did not think that the management in the author's cases, namely, to leave the uterus unstimulated, the patient recumbent on her side, and the fundus

dependent, would give the most ideally natural mechanism. From the accounts of savage tribes it might be inferred that the original process was rather for the woman to stand up and squeeze her abdomen hard with both hands. If the patient were recumbent on the side, he thought that the usual plan of stimulating the uterus somewhat by handling would probably secure a mechanism nearer to the ideally perfect one than that of leaving it untouched.

Dr. GANDY asked Dr. Champneys whether, in any of these recorded cases, any kneading or other external pressure was used to the uterus in order to expel the placenta, or whether its expulsion was left to normal contraction of the womb; if the former, it seems obvious that the presenting portion of placenta would depend on the amount and character of the force used.

Dr. M. HANDFIELD-JONES remarked that Dr. Champneys had put forward as one of his conclusions the existence of a certain degree of hæmorrhage during the separation and expulsion of the placenta; moreover, in the last column of his table he had given the measured quantities of blood so lost in various labours. Such amounts were really valueless as a test of the amount of blood lost during the third stage of labour, for the placenta might lie from various reasons for some time in the vagina before being expelled, and then very varying amounts of blood would collect. In strong, healthy primiparæ the placenta and membranes were sometimes expelled almost immediately after the birth of the child, and without hæmorrhage; blood did flow almost immediately afterwards from the vagina, but it did not actually accompany the secundines. He was disposed to think that in a perfectly normal labour the third stage was bloodless.

Dr. GRIFFITH said that there was another subject of great importance in connection with that under discussion, namely, the mechanism by which an extremely thin and delicate layer of the uterine mucous membrane is separated and cast off in the condition known as membranous dysmenorrhœa. The mechanism by which this is effected would probably be amply sufficient to detach and expel the placenta and membranes.

Dr. BOXALL, referring to the causes of placental detachment, suggested that another factor, of which no mention was made by Dr. Champneys in his paper, might possibly play some part in the process. The placenta, he pointed out, cannot rightly be regarded as a homogeneous mass; for, after the birth of the child, the conditions therein existing are profoundly altered. The respiratory movements of the child determine a flow of blood to the lungs from the fœtal portion of the placenta. The thin lamina of maternal tissue, by which alone contact is maintained with the uterine wall, is then deprived of the support towards the cavity of the uterus, which up to that point it received from the fœtal portion of the placenta. Dr. Boxall quite agreed with Dr.

Matthews Duncan that the mechanism of the expulsion of the placenta could not be studied apart from that of the separation of the membranes, and the bearing of this would doubtless be made still further apparent in Dr. Champneys' subsequent paper. Dr. Boxall considered that the mechanism of the expulsion of the placenta, as insisted upon by Dr. Champneys, goes very far to reconcile the opposing views as proounded by Duncan and Schultze, for while confounding neither it relegates each to its proper place. Each view holds good for a certain percentage of cases, and up to a certain point. The underlying conditions, however, are subject to variation in different cases. The mechanism is modified accordingly. It is only by rightly appreciating the difference which exists that a satisfactory understanding can be arrived at. This difference, as Dr. Champneys has shown, *mainly* turns on the position in which the placenta is implanted on the uterus, and that again is indissolubly connected with the question of the separation of the membranes. As long as the membranes at the verge of the placenta remain adherent to the uterine wall inversion of the placenta is maintained, but if any portion of the attachment give way the adjacent margin of the placenta, being no longer supported, becomes the most dependent part, and the blood forming the subplacental hæmatoma at the same time finds an exit of escape. *Cæteris paribus* it follows that the lower the implantation of the placenta, the more readily will this happen, for the membrane intervening between the lower margin of the placenta and the edge of the rupture is correspondingly diminished in extent, and is therefore the more readily separated; but this is not all. The word "mainly" was used advisedly. For other reasons one portion of the placenta or membranes might be detached, as it were, accidentally. This leads to a disturbance of the ordinary process. It is a noteworthy fact, that in each of the anomalous cases recorded by Dr. Champneys special conditions existed, which in themselves might serve to explain the discrepancy. Dr. Champneys has already pointed out that in two of these (69 and 70) the cord had probably been pulled upon. Traction on the cord would naturally tend to separate and to bring about the presentation of that portion of the placenta and of the adjacent membranes in the neighbourhood of its insertion, For it was found that the insertion of the cord rarely coincided with the presenting part of the placenta as evidenced by the position of the stain. Thus out of the seventy cases in twelve only was the insertion of the cord within one inch of the stain, while in twenty-two it was separated by more than three inches. The bearing of this is readily seen. Take, by way of example, an extreme instance, a battledore placenta with the insertion of the cord at the highest point in the uterus. If in such a case the cord were pulled upon, detachment of the upper portion of the placenta and adjacent membranes would be

specially liable to occur, and the placenta by turning a somersault to present by its maternal surface. The presentation of the amnion beyond the edge of the placenta in four cases (12, 14, 17, 46) may be readily explained by the special conditions which existed. In each of them the portion of membrane intervening between the lower margin of the placenta and the cervix had been already separated from its attachment, when the staining was performed, and, a clot having formed in that situation, a bulging of the membrane over the cervix was produced, and thus the edge of the placenta was prevented from coming down. In one case (19) the placenta presented by a point near the upper edge. This again was probably the result of traction on the cord and consequent separation of the placenta. The case was one of contracted pelvis with the vertex, funis, and left foot presenting. An unsuccessful attempt was made to replace the foot and funis. Turning was accomplished, but the fœtus died, and the aftercoming head was subsequently perforated. Before the placenta was born a large clot came away carrying down the membranes before it. All the above cases, therefore, appear to be explicable on the assumption of abnormal separation, such as is produced in accidental hæmorrhage and placenta prævia. The discrepancy in the two cases which follow is probably the result of abnormal adhesion. Case 26 was one of morbidly adherent placenta which was only detached with much difficulty (short of inserting the hand). The maternal surface of the placenta was very irregular, much lobulated and much torn, and two of the cotyledons were extremely pale. Case 61 was one of old accidental hæmorrhage tending to abnormal adhesion over the greater part of the membrane intervening between the lower margin of the placenta and the cervix. For in examining the after-birth it was noted that at the margin of the placenta adjoining the rupture in the membranes was a considerable amount of dirty yellow material (old blood-clot) extending for at least three inches in either direction over the outer surface of the chorion. As in neither of these cases was the placenta implanted centrally over the fundus, the stain should have occupied a position near the lower margin, instead of the centre of the placenta. Case 29, in which the stain was nearly midway between the upper and lower margin, conforms to the usual rule, for in that case the placenta was implanted exceptionally near the fundus. Dr. Champneys has referred to the complete absence of fundal attachment in his cases. In an examination of 100 after-births in which the membranes were expelled in one entire bag, Dr. Boxall had also found that in no case did an approximation to such a condition exist. In ten cases only did any part of the placenta overlap the fundus, and even in these it was merely the margin that encroached upon it. In only one instance was the fundus overlapped by more than one inch, and that by was one and three quarter inches.

Case 29 is one of these cases in which just the margin of the placenta overlapped the centre point of the fundus and therefore in which the placenta was situated much higher than usual. These observations with regard to the position of the placenta entirely coincide with those of Dr. Champneys. If the uterus were divided into three zones, upper, middle, and lower, Dr. Boxall found that in 100 cases examined the centre of the placenta would occupy some point in the upper zone in twenty-one, in the middle zone in seventy-seven, and in the lower zone in two cases, but that generally speaking the difference in the extreme limits was not great, for very high, like very low attachments, were extremely rare.

Dr. CHAMPNEYS, after thanking the Society for the attention which they had given to his papers, said that it was impossible to follow the details of such a subject while they were being read, and that the answers to many of the questions asked by speakers would be found in the papers which they had heard. He would answer the last speakers first. Dr. Gandy would find it expressly stated in the paper that no kneading of the uterus was practised. Dr. Handfield-Jones would find the answer to his question and remarks in the table. To Dr. W. Griffith he would reply that the mode of detachment of the membrane in membranous dysmenorrhœa might or might not have analogy to that of the detachment of the placenta; such analogy would have to be proved. The question as to the presence of a uterine cavity after the birth of the child was discussed in the paper; reasons were there given for thinking that the anterior and posterior walls were not at this time in contact, but were separated to a small extent by matters which must be in the uterus (because they came out of it afterwards), namely, not only the placenta, but also, in many cases, some liquor amnii, and some blood. To Dr. Galabin he replied that the question of the order of detachment of different parts of the placenta was discussed in the paper, and an opinion expressed that, if the adhesion of the placenta is uniform, the detachment probably begins from the periphery of the placenta, but that, if one part is more adherent than the rest, the order of detachment is determined by the more adherent part, beginning at the parts most remote from this. As regards the effusion of blood as a cause of detachment the words used were (see Abstract):—"It is probable that, in addition to reduction of the placental site, some escape of blood plays a part in the ordinary mechanism of placental detachment." The presence of hæmorrhage plays a part, even though a subsidiary part, in the mechanism of detachment. He could not agree with Dr. Galabin that artificial friction is to be regarded as natural; surely the less that is done to the uterus the more natural is the process. The question of posture is discussed in a subsequent paper, and the opinion expressed that the left lateral recumbent position cannot

be regarded as natural; the most natural posture being, probably, that of squatting. He was much interested with Dr. Matthews Duncan's remarks. Dr. Duncan had no need to excuse his paper, published in 1871, which had been, so to say, most fertilising, and even now was one of the classical works on the subject. Moreover, Dr. Duncan, as a pioneer, must always occupy a conspicuous position in the history of the subject. Dr. Duncan has remarked that anatomy should precede physiology, and that the papers just read should in point of time have followed frozen sections. But what was the present condition of affairs? An author mentioned in the paper (Dohrn) states that the third stage of labour has been made known to us in all its details—in one sense. Dr. Duncan believes exactly the contrary to the description of that author; the text-books publish authoritative and unhesitating descriptions, which they copy from each other, and contradictory statements are made with equal authority. What is to be done? Are we to wait a couple more centuries for half a dozen frozen sections? Are we to leave the subject blank in our text-books and teaching, and say we know nothing of it? He would go further and say that frozen sections, unless in fair quantity and harmonious, cannot in any way upset a large number of accurate clinical observations like the present; and, even if in quantity, they must harmonise with clinical phenomena to be accepted. He (Dr. Champneys) thought it was high time to try and see how the matter lay—what was proved and disproved—probable and improbable; and the present inquiry was an attempt in this direction, begun with an unprejudiced mind, after reading everything which he could find to have been published on the subject, and brought to the test of accurate clinical observation. With Dr. Duncan's description he had been unable to agree, principally on account of the strong and dogmatic denials which it contained. Had Dr. Duncan said that the placenta presents usually with a point near its edge, he would have agreed with this, but when Dr. Duncan says that the fœtal surface does not present unless the cord has been pulled, that no inversion of the placenta takes place, and that no blood is effused behind the placenta in normal cases, he makes statements which seem to him (Dr. Champneys) to be contrary to the facts as ascertained, and at variance with the observations of all recent investigators. As to the Porro cases, these have been most unjustly and prematurely accepted as necessarily representing the natural third stage of labour. This position has been ably criticised by Sänger, and reasons have been given in the paper for rejecting it. The uteri thus procured have been cut open, cut off, and generally squeezed and teased, and we are asked to regard the placenta in such uteri as giving us a faithful picture of the natural third stage of labour! They might no doubt illustrate points in the process, but only when such points were

in accord with clinical phenomena. The question of the hæmatoma could not again be settle by appeals to such uteri, especially if its formation had been actually observed, as Schroeder asserted, and when clinical observation gave direct evidence of its presence. That the foregoing papers did not settle the question was likely, but he trusted that they would contribute to this end, and if so they would not have been in vain.

MAY 4TH, 1887.

JOHN WILLIAMS, M.D., President, in the Chair.

Present—47 Fellows and 5 Visitors.

Books were presented by Mr. Alban Doran, Mr. Arbuthnot Lane, Dr. Schultze, the Royal Medical and Chirurgical Society, the Smithsonian Institution, and the Société Obstétricale et Gynécologique de Paris.

A vectis was presented to the Museum by Dr. Corrie Jackson.

James Maughan, L.R.C.P.Lond., and Frederick Carden Brodie, L.R.C.P.Lond., were admitted Fellows of the Society.

John Hamilton, F.R.C.S.Ed. (Swadlincote); Arthur W. Rowe, M.D.Dur. (Margate); and Robert Withers, M.R.C.S. (Otago), were declared admitted.

The following gentlemen were elected Fellows of the Society:—Milward Edmund Dovaston, M.R.C.S.; Frederic William Hewitt, M.D.Cantab.; John Talfourd Jones, M.B.Lond. (Brecon); William Thomas Law, M.D. Edin.; and Arthur Henry Mason, L.R.C.P.Lond. (Walton-on-Thames).

REMOVAL OF APPENDAGES ON ACCOUNT OF CHRONIC INFLAMMATORY DISEASE.

By Lawson Tait.

Mr. Lawson Tait exhibited specimens from twenty-three cases of operation for removal of the appendages on account of chronic inflammatory disease which had occurred in his practice since the beginning of the present year. He laid special emphasis on the accounts given of six of the preparations for several reasons, the chief of which were that they comprised not only typical examples of the changes effected by the disease, but also embraced certain special peculiarities and relations of exceptional points.

The first was a case of a lady who had been operated upon for removal of the right uterine appendages on account of pyosalpinx about three years before, and was an example of the somewhat frequent experience that it was an unwise proceeding to remove only one side when the disease was such as to justify interference at all. That is to say, when chronic inflammatory disease of the uterine appendages was so pronounced on one side as to justify surgical interference, the wisest plan was to remove both sets of appendages even if the second were healthy. This patient derived but temporary benefit from the first operation, and came back to have the second set of appendages removed on account of intense suffering, the pyosalpinx having recurred on the left side. The patient unfortunately succumbed to the operation, and was the only fatal issue of the series.

The second case was one in which the symptoms had been so severe nearly six years ago that a well-known London physician was induced to undertake the removal of the appendages, but after making an incision nearly six inches long he had to desist on account of the adhesions. The patient's symptoms were, of course, not

in any way improved, but she got steadily worse, so much so, that she was induced to apply to Mr. Tait for the somewhat desperate expedient of a second operation. This he undertook, and through an incision not more than an inch long removed the appendages in an operation not extending over more than ten minutes. The adhesions were firm, but were easily overcome. Both tubes were in a condition of chronic suppuration. The patient had had repeated attacks of peritonitis, more than one of which had very nearly brought her to the grave. She made a perfect recovery. The case illustrated the conclusion to which Mr. Tait had come that no kind of adhesions were sufficient to justify an incomplete operation, and he was strongly of opinion that the opprobrium of this kind of practice would in future be in cases where inexperienced operators attempted operations which they could not complete.

The third case was one of a young woman, unmarried and a virgin, in whom there had developed two enormous pyosalpinxes without any history which could be obtained of their method of inception. They contained each about a pint and a half of putrid pus; their adhesions were as terrible as anything that the operator had ever encountered, but with patience and perseverance they were removed. A few days after the operation the uterus of this patient sloughed out. She has now nearly recovered.

The fourth case was a patient aged 44, in which a right pyosalpinx had ruptured and caused acute peritonitis during the course of which the operation was performed. This patient is making an easy recovery.

The fifth case was a patient in which there was a pyosalpinx on the right side, and a hydrosalpinx on the left; the removal of the former was a matter of extreme difficulty, whilst the hydrosalpinx was removed without the separation of any adhesions at all. This case was one in which a second operation had been required, as in the first case, after an interval of nearly five years. The patient had made an easy recovery.

Dr. PRIESTLEY begged to inquire from Mr. Lawson Tait what were the specific reasons for his thinking it desirable to remove the uterine appendages on both sides, when only one side was diseased. It was well known that one diseased ovary might be removed, leaving the other in functional activity, and not necessarily becoming diseased in the future. If the Fallopian tubes and other lateral appendages of the uterus were removed on both sides, it was obvious that the reproductive function would be entirely destroyed, and Dr. Priestley desired to know, therefore, if disease had been observed so frequently to set in on the opposite side, after the appendages had been excised for diseases on the other, as to justify the removal of both at the same time, even when one side was sound at the time of the operation.

In reply to Dr. Priestley, Mr. TAIT had to say that his remarks had been somewhat misunderstood. He did not invariably remove both sides when only one was diseased, but he had been so convinced by his past experience of the unwisdom of removing one side only, that in every case he put the matter to the patient, explaining the risks of a second operation and leaving the matter entirely to the patient's decision. This of course was the right thing to do. If the patient did not care to risk the performance of a second operation she accepted what certainly was Mr. Tait's advice, that both sides should be removed when the removal of one was requisite. On the contrary, some women, but he was bound to say by far the smaller proportion, were so anxious to maintain every scrap of possible maternity they might have that they preferred to run the risk of a second operation. In such cases of course we were all bound to accept their desires.

MALFORMATION OF THE FALLOPIAN TUBE.

By ALBAN DORAN.

IN April, 1887, Dr. Bantock removed a large ruptured cyst of the left ovary from a woman aged 48. The right ovary bore a cyst nearly an inch in diameter; the operator considered it advisable to remove the right appendages, and they constitute the specimen which is now exhibited.

The fimbriæ of the tube presented a remarkable appearance at the time of operation. They formed a mass of whitish or chalky excrescences, very unlike the pale red wattles characteristic of a healthy tube. On close exami-

nation I found that this appearance was caused by a deposit, probably fibrinous, from the mixed ascitic and ovarian fluid which filled the peritoneal cavity. One of the fimbriæ, or possibly the hydatid of Morgagni, has undergone a fleshy hypertrophy, being enlarged so as to form a solid pedunculated body about an eighth of an inch in diameter. This body is not cartilaginous, but it may represent a stage of Tait and Eve's "Undescribed Disease of the Fallopian Tubes" ('Transactions of the Obstetrical Society,' vol. xxv, 1883, p. 249, and Museum Royal College of Surgeons, Path. Series, specimen 4584A).

The tube displays some interesting malformations. In some respects it resembles the specimen, fig. 5, in my memoir on this subject published in the Society's 'Transactions,' vol. xxviii, 1886, p. 171. There is a hernial protrusion half an inch behind the normal fimbriæ. A small, apparently single bunch of accessory fimbriæ lies on this hernial protrusion of the mucous membrane of the tube. On close examination, I found that there are really two bunches of fimbriæ; one of these outgrowths surrounds an accessory ostium. As in the specimen just noted, there are outrunners on the posterior surface of the broad ligament, three in number in this case; one, which lies close to the ovarian fimbria bears a crown of fimbriæ at its extremity. It is not quite in the position of the hydatid of Morgagni, a structure which certainly may be represented by a conspicuous pedunculated fringe in some cases.

In the communication quoted above, I referred at length to the theories which have been brought forward to explain the origin of accessory fimbriæ and ostia, of the hernial protrusion of the tube, and of the fimbriated outrunners on the surface of the broad ligament. It might be suggested that thin-walled cysts lying under the broad ligament as it passes over the Fallopian tube must be developed from a hernial protrusion of the tube, of the kind seen in this specimen. I have fully described the morbid anatomy of "Broad Ligament Cysts above the Fallopian Tube," in the 'Transactions of the Pathological

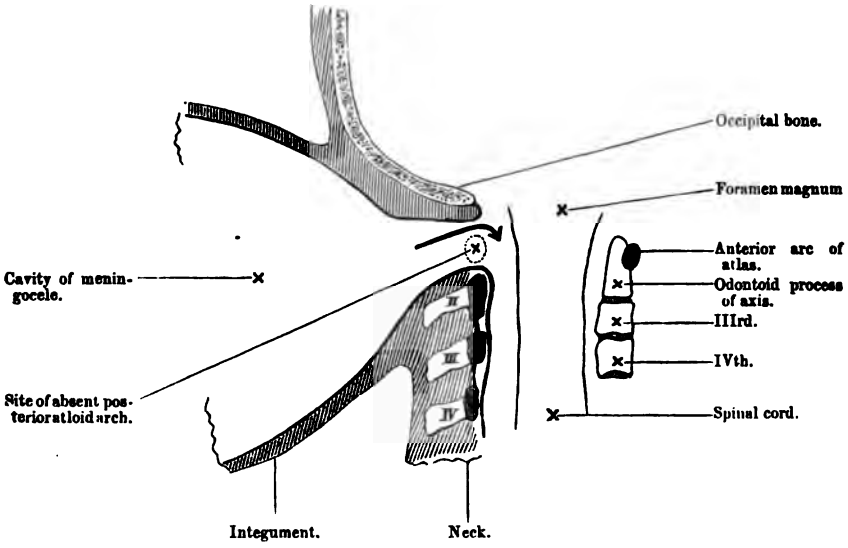
Society,' vol. xxxvii, 1886, p. 348. There I have noted that these cysts are identical with thin-walled broad ligament cysts below the tube. Such cysts may often be seen above and below the tube in the earliest stages of their development; the reasons why those above the tube do not develop whilst those below may become large tumours are given in the monograph just mentioned. Hernial protrusions of the tube, consisting as they do of a portion of the tubal mucous membrane, always communicate with the canal of the tube. The thin-walled broad ligament cysts above the tube never, as far as I have been able to detect, exhibit the least trace of any connection with any part of the tube.

A CASE OF SPINAL MENINGOCELE.

By JOHN PHILLIPS, B.A., M.B.Cantab., M.R.C.P. (for Mr. REGINALD CLARKE).

THE specimen shown was a seven months' fœtus with a dissection of a meningocele between the axis and occipital bone. The mother had received a severe mental shock at the fourth month of her pregnancy. The child presented by the breech, but the amount of liquor amnii was not excessive. Labour progressed favourably until the shoulders reached the perinæum. On examination, a softish semi-fluctuating tumour of the size of a cocoa-nut could be detected high up in the pelvis and lying over the symphysis pubis. The diagnosis was made of either a second amniotic sac, or some fœtal deformity. Considerable traction was used, but with a negative result. A finger was then inserted into the mouth and the jaw brought down; simultaneously rupture of the sac took place, and delivery followed rapidly. On dissection, the occipital bone was found normal; no adventitious opening

was discovered between its ossifying centres. It articulated with an atlas, which had its whole posterior segment absent, resembling the condition found in spina bifida of the lumbar region. The axis was normal. Between the occipital bone and the posterior arch of the axis was a



Diagrammatic section of spinal meningocele (Dr. John Phillips).

congenital foramen, partly occupied by the neck of the sac and partly by a spurious occipito-axoid ligament. The lumen of the neck of the sac easily admitted a probe, and the cavity of the meningocele would contain, when distended, about half a pint of fluid.

FŒTUS DISCHARGED IN THE MEMBRANES ENTIRE AT SIX MONTHS AND THREE WEEKS.

By Henry T. Barton.

FIBROMYOMA OF RIGHT OVARY REMOVED BY ABDOMINAL SECTION.

By C. H. Carter, M.D.

The specimen was removed from a young woman, aged 20, single. It was first noticed about six months ago; and when seen the abdomen was occupied by a hard tumour lying centrally, and reaching four inches above the umbilicus. The patient had not been unwell for three months. She was anæmic and pale; after a delay of a few weeks the period recurred with the improvement of the general health. During the last six weeks before the operation the abdominal girth increased one inch. The tumour weighed ten pounds and three quarters, and required an incision of nine inches in length. It had a broad pedicle, which was ligated; there was also a wide omental adhesion, which was ligated. The wound healed by first intention. The tumour is rounded, smooth, very hard, measuring twenty-two and a half inches by twenty-four. Sections examined by Dr. Norman Dalton show its structure to be of a fibro-myomatous character.

DR. HASLAM'S MIDWIFERY FORCEPS.

By R. Paramore, M.D.

ON HÆMORRHAGIC PARAMETRITIS.

By J. Matthews Duncan, M.D.

(Received November 1st, 1886.)

(*Abstract.*)

Dr. Matthews Duncan relates three cases of severe bleeding in cases of parametric abscess. In the first case the bleeding occurred on opening the abscess and was easily restrained: the woman recovered. The bleeding was probably only a profuse oozing. The second case he did not see; the bleeding was rapidly fatal and flowed through the bladder, the abscess having spontaneously opened into that viscus. In the third case, also fatal, the bleeding occurred in repeated flows through the bladder, along with pus and sloughs. The bleeding arose from gangrene laying largely open the external and internal iliac veins at their junction. This case he regards as one, not of ordinary parametric abscess, but of progressive gangrene of cellular tissue. Of this latter disease he has recorded a case in an appendix to his work 'On Perimetritis and Parametritis.'

In gynæcology and obstetrics nothing is more important than hæmorrhage, and nothing is so immediately and pressingly urgent. With perimetritis it has a well-known double connexion, first, as a consequence of hæmorrhage, as seen in the familiar hæmatocele; or, second, as a source of hæmorrhage in the same disease, according to the theory of Virchow. But with parametritis it is not familiarly associated in the professional mind, except, perhaps, with that parametritis which may result from a hæmatoma, it being well known that an effusion of blood into parametric tissue may superinduce suppuration.

The hæmorrhage which I propose to describe in this paper occurs as a consequence of, or in connexion with, parametric abscess, not as a cause of it.

I have elsewhere, in discoursing on parametritis,* described a bleeding which occurred on opening a psoas parametric abscess in the upper and anterior part of the right thigh beneath Poupart's ligament. The hæmorrhage was judged to be venous from its colour, but it was not suspected to flow direct from an open vein, for the incision was made through thinned skin alone, and the pus evacuated was not tinted with blood. It was probably a passive hæmorrhage or copious oozing, and it was arrested by slight pressure.

In the same book I give some details, all that can be now got, of a case of fatal bleeding from a psoas parametric abscess, the hæmorrhage flowing through the urethra. The case is derived from the hospital records. I did not see it. It is as follows:

E. W—, aged 17, has always had good health till now. Has had one child, born in the workhouse, three weeks before admission to the hospital. She left the workhouse two weeks after confinement, and then caught cold. The case presented no peculiarity till the thirteenth day after admission. Then, while passing urine, blood began to flow through the urethra; above ninety ounces. Pulse 160, fluttering. Eight hours afterwards, on the same day, bleeding returned, and she died in an hour. The right pleura contained a few ounces of slightly turbid fluid. A thin layer of œdematous lymph was spread over the posterior part of the left lung. The pericardium contained about an ounce of turbid fluid. The heart was anæmic, its tissue soft, its valves healthy. It weighed ten ounces, and its chambers contained pale, soft, fibrinous clots. The left lung œdematous and anæmic. The lowest lobe of right lung collapsed; the upper lobes œdematous and anæmic. Viscera generally anæmic. Free edge of omentum adherent to caput coli. On the right side of

* 'Clinical Lectures on Diseases of Women,' 3rd edition, pp. 242, 355.

the posterior wall of the bladder, and near its neck, was a ragged opening of about the size of a florin. This led into a cavity as big as a large pear beneath the sheath of the right psoas and extending the whole length of the muscle. This abscess cavity and the bladder were filled with blood-clot and puriform fluid (the clot in the bladder weighing more than half a pound). The posterior wall of the uterus, the rectum, and vermiform appendage, together, formed a sac containing purulent fluid. There was no thrombosis of the right iliac veins.

In the above report there is no indication of the source of the hæmorrhage having been made a special object of search, nor is there any hint given of an opinion on the subject. These remarks I make to justify my venturing to state my own opinion that the case was one of hæmorrhage from an open vein. The hæmorrhage was copious and quickly fatal, and the whole case has much resemblance to that which I am now about to give with fuller details, though not so full as could be wished, and in it there was sloughing of the venous wall, and a large opening, permitting free flow of blood into the abscess cavity, and thence into the bladder.

Before describing this case I may refer to the case of Dr. Graily Hewitt, which appears to me to have analogy with it. This case is published in the ninth volume of the Society's 'Transactions.' In it there was a parametric abscess after delivery, communicating with the uterine cavity, and into this abscess a branch of the uterine artery opened and bled freely. This opening was held to have been somehow produced by violence, by pressure on the abdomen, but I venture to suggest the improbability of this theory of its causation.

The following details are chiefly from the notes of Mr. Drage, resident midwifery assistant of St. Bartholomew's Hospital.

M. M—, æt. 27, was admitted into "Martha," on October 29th, 1885. Married seven years, has had five children, of which the last was born five and a half years

ago. No miscarriage. Catamenia commenced at fourteen, and were regular and without pain. The present illness commenced fourteen days before admission, with an attack of shivering, vomiting, and pain in the belly. She has had a yellow vaginal discharge for some weeks. Says she has lost flesh since the commencement of this illness. She is dark and somewhat anæmic. The urine is acid, contains albumen and pus-cells; no casts nor blood. She micturates easily. There is great tenderness and tension over the hypogastric regions, but nowhere can any definite hardness be made out. The cervix uteri is nearly in its natural situation; in front of it, and on each side, as far as the finger can reach, there is dense tender induration. The pulse is 98, and the temperature chart is nearly natural, showing only a rise on November 3rd to 100·3°, and a descent on the 6th to 96·8°.

On November 11th a large amount of blood was passed in the urine. The fluid part of the urine was deeply tinted with blood, and contained pus-cells; sp. gr. 1012, reaction alkaline. Pulse 108. Lies with knees drawn up. Next morning the urine, being retained, was drawn off by catheter, and with it clots were discharged. For the next three days much blood and clots and some pus were passed with the urine. The urethra was found to be dilated. On the 16th there was much less blood passed. Temp. 98·2,° pulse 120. She was much blanched. On the 17th and 18th, the amount of blood is reported as diminishing, and that of pus increasing; and soft dirty greyish sloughs were passed through the urethra. Now she had for a few days incontinence of urine. On the 23rd the general condition is reported as improving, but the right lower limb is the seat of great pain. On the 24th clots of blood were passed with the urine and there was sugar in it. (Sugar was not again found.) On the 26th the right lower limb was painful, swollen, and tender, pitting on pressure. Urine sp. gr. 1018, very little blood. From this date till December 6th no blood was passed. On the 5th the swelling, as felt *per vaginam*, was found

to have much diminished. On the 6th blood in large quantity again appeared in the urine. Though there was incontinence the urine was retained, probably by obstructing clots, which were putrid, and a catheter was used. Pulse 136, temp. 100·5°. On the 8th clots had ceased to pass, and she micturated again naturally. The upper part of the right thigh was much swollen, being four inches more in circumference than the left; and the whole leg was paralysed and anæsthetic. There was much pain on moving the limb, and the pain was felt as far as the sacro-iliac joint. The pudendum was swollen and œdematous. About this time a distinct fulness and ill-defined tender hardness was found about Poupart's ligament. A consultation was now held with Mr. Langton, and it was decided not to cut into the mass, there being no feeling of fluid anywhere, free discharge through the bladder, and diminution of swelling as felt *per vaginam*. On the 14th Dr. Steavenson reported marked impairment of electrical excitability of the muscles of the right thigh and leg, and marked loss of electric sensibility. On the 18th the swelling of the thigh was found much reduced, and the pus in the urine was very small in amount. On the 26th the swelling above Poupart's ligament was found to have disappeared, as well as nearly the whole of the swelling in the thigh. The swelling felt *per vaginam* was also much less.

On January 5th there was much complaint of pain, and the temperature rose to 102°. On the 6th there was a sudden discharge of pus and blood from the bladder, and the temperature fell to 99°; pulse 140. A cataleptic attack occurred with rigidity of limbs. A similar attack occurred on the 7th, and at this time the urine was discharged involuntarily with much pus and sloughs. Rigors now came on. She fell into a state of unconsciousness on the 13th, and died comatose on the 14th, temp. 100°.

The following account of the post-mortem examination is from the notes of Dr. W. Griffith, who conducted it. Body emaciated. On opening the abdominal cavity its

contents appeared to be normal. On raising the small intestine from the brim of the pelvis it was observed that the uterus, ovaries and rectum were all displaced to the left side of the pelvis by an elastic sac, covered by peritoneum and the right broad ligament, nearly filling the pelvis, extending into the right iliac fossa and along the psoas to the lower border of the right kidney; it was found also to extend below Poupart's ligament along the inner side of the neck of the femur as far as the lesser trochanter. It passed also between the uterus and bladder, but only a little beyond the median line of the uterus, and from this part of the abscess a passage three quarters of an inch long and one eighth of an inch in diameter entered the anterior wall of the cervix, ending at its left border. The abscess was covered by peritoneum, and its base was formed by pelvic fascia and levator ani. The right half of the anterior surface of the sacrum was bared of periosteum, the sacro-iliac joint open and disorganised. In the right iliac fossa the surface of the ilium was also bare. The abscess cavity contained blood-stained pus and sloughs, but no blood. The bladder was contracted, its whole wall posteriorly in a sloughing ragged state, but no large aperture presented itself. The right ureter, which lay exposed by the side of the cervix, was sloughing, the pelvis and calices of the right kidney full of pus, the kidney small and pale. In the outer wall of the abscess, and with a large opening into it, was seen the bifurcation of a great vein (the internal iliac), each main division closed by a clot, each clot nearly an inch in length, and projecting into the cavity of the abcess. The arteries were healthy.

It appears to me that the history of this case, taken as a whole, separates it from the ordinary frequent varieties of parametritis. In none of its great aspects does it resemble that very common disease, its origin, its progress, the sloughing, the affection of bone and joint, its termination. It is a very rare kind of parametritis, and I class it with a case which I have described at the end of

my book on 'Perimetritis and Parametritis.' In that case there was extensive sloughing, and progressive gangrene of cellular tissue, but in that case there was, fortunately, no opportunity for post-mortem examination. Similar cases are recorded as occurring in the perinæum and scrotum in the male, and in the neck.

Dr. GRAILY HEWITT referred to the particulars of a case he had published, and which Dr. Matthews Duncan had mentioned in his paper. This case was not he (Dr. Graily Hewitt) considered in any way analogous to the cases of Dr. Duncan's, and there could be no doubt that in the case in question the fatal hæmorrhage resulted from a physical injury of the uterus. In the cases related by Dr. Matthews Duncan, the bleeding was probably due to ulceration resulting from compression connected with the inflammatory process.

Dr. WILLIAM DUNCAN had had two cases of pelvic abscess in which, after bursting, there was oozing of blood for several days. He considered this was due to rupture of some capillaries in the so-called pyogenic membrane lining the abscess cavity. As pelvic abscesses differ in no way whatever, with regard to the pathological processes which may take place in them, from abscesses in other parts of the body, such as suppurating buboes or tonsils, he deprecated the use of the misleading title given to the paper, instead of the more correct one of hæmorrhage into the sac of a parametric abscess.

Dr. GALABIN had met with one case in which fatal hæmorrhage into a pelvic abscess occurred. The case was originally diagnosed as one of retro-uterine hæmatocelè. A young woman had been seized with sudden pain and faintness in consequence of coitus during a menstrual period, and a retro-uterine tumour was found filling the pelvis, and displacing the uterus forward. The hæmatocele, if it were one, suppurated, discharging through both bladder and rectum, and the patient was in Guy's Hospital for about three months. Eventually she got erysipelas about the vulva, and was transferred to the erysipelas ward. While there sudden hæmorrhage into the abscess cavity occurred, and proved fatal. Although the disease was supposed to have been at first intraperitoneal, extensive burrowing and sloughing in the pelvic cellular tissue was found at the autopsy. The bleeding was considered to have been from an artery laid open.

Dr. TAIT felt bound to say that such results in pelvic suppuration must be extremely rare, for after a very extensive experience in such cases he had never seen anything with such results. It seemed to him that such cases ought to be dealt with before these disasters arrived by abdominal sections. Certainly in one of Dr.

Duncan's cases the history was clearly such that abdominal section could have achieved a successful issue. Concerning the title of Dr. Duncan's paper he shared the view of the previous speaker that the title was an inaccurate one. To speak of hæmorrhagic parametritis led people to believe that they were about to hear of a new disease something like hæmorrhagic scarlet fever or hæmorrhagic measles. Had the title been parametritis ending fataly by hæmorrhage, it would have been a reasonable one.

Dr. MATTHEWS DUNCAN thought the title of his paper a matter of no moment: whether hæmorrhagic parametritis or parametris with hæmorrhage. He knew no reason to regard extravasation of urine as the cause of the sloughing; in analogous cases alluded to in the paper it was not the cause. Besides, in a very large number of cases of parametric abscess opening into the bladder, which he had watched, there was, as a rule, healthy progress, and he had never known any evidence of extravasation of urine into the abscess cavity; it might occur, but he knew no evidence of it.

ON THE FREQUENCY OF PATHOLOGICAL CONDITIONS OF THE FALLOPIAN TUBES.

As determined by Observations in the Post-mortem Room of the London Hospital.

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(*Abstract.*)

THE present paper is the outcome of observations made on the pelvic organs in a series of 100 cases in the post-mortem room of the London Hospital.

As is well known, very contradictory opinions have been held as to the absolute frequency with which dilatation of the Fallopian tubes—hydrosalpinx, pyosalpinx, and hæmatosalpinx—occurs among the general population. Recently Dr. Henry Coe in his paper "Is Disease of the Uterine Appendages as frequent as it has been represented to be?" ('American Journal of Obstetrics,' June, 1886) says, "Actual disease of the tubes is far less frequent than is generally believed." Others, on the contrary, are of opinion that these conditions are of frequent occurrence. The question of the absolute frequency of disease of the tubes is one that could only be settled by observations in the dead-house of a general hospital.

Cases where the contents of the dilated tubes were not distinctly purulent or were not composed of blood, have here been classed as hydrosalpinx.

Disease of the Fallopian tubes, restricting the expression to pyosalpinx, hæmatosalpinx, and hydrosalpinx, was met with in seventeen cases out of the one hundred examined.

A detailed description of each specimen is given in the paper,

and a table classifying the chief points of interest in these seventeen cases has been added.

The present paper is the outcome of observations made on the pelvic organs in a series of 100 cases in the post-mortem room of the London Hospital.

During a period of thirteen months I endeavoured either to be present myself at the post-mortem examination of every woman dying in the hospital on whom an examination was permitted, or, if unable to be present, to have the pelvic organs removed *en masse*, and kept for me to see.

In either case the plan adopted was to take away the entire contents of the pelvis in a large jar and examine them subsequently. Each specimen, therefore, was described more in detail, and after a more leisurely examination than would have been possible in the post-mortem room.

As might have been expected, the investigation led to meeting with many interesting conditions other than those connected with the Fallopian tubes, but in this paper it is only intended to mention pathological conditions of the tubes such as are easily recognisable by the naked eye, and such as therefore would be easily identified during life by abdominal section.

As is well known, very contradictory opinions have been held as to the absolute frequency with which dilatation of the Fallopian tubes—hydrosalpinx, pyosalpinx, and hæmatosalpinx—occurs among the general population.

So far as I know there are no statistics giving the percentage frequency of these conditions.

Recently Dr. Henry Coe, at the conclusion of his paper entitled 'Is Disease of the Uterine Appendages as frequent as it has been represented to be?' published in the 'American Journal of Obstetrics' for June, 1886, gives as one of his deductions, "Actual disease of the tubes is far less frequent than is generally believed."

Dr. Coe does not, however, adduce any statistical evidence in support of this opinion.

The question of the absolute frequency of disease of the Fallopian tubes is one that can only be settled by observations in the dead-house of a *general* hospital.

Of the 100 cases referred to in this paper some came from the medical, some from the surgical, and a few from the obstetrical wards of the hospital.

Cases where the contents of the dilated tubes were not distinctly purulent, and were not composed of blood, have been classed as *hydro*-salpinx.

Disease of the Fallopian tubes, restricting the expression to pyosalpinx, hæmatosalpinx, and hydrosalpinx, was met with in seventeen cases out of the 100 examined.

The following is a description of each of the specimens, with a note of the associated morbid conditions, and the history of the patient, so far as it could be ascertained.

CASE 1. *Left hydrosalpinx.*—The *left Fallopian tube* presents at its outer part an oval swelling, the size of a large walnut. It contains clear yellow fluid. Part of the swelling is adherent to the sigmoid flexure. The outer end of the tube is firmly adherent to the ovary, and the fimbriated extremity cannot be distinguished.

The dilated portion of the tube does not communicate with the part of the tube internal to it. Attached to the inner surface of the dilated part are two hard white bodies, the size of a large pin's head.

The *right Fallopian tube* in its outer half is wider than normal; its fimbriated extremity cannot be distinguished, as the outer end of the tube is lost in a mass of adhesions to the right ovary.

There are old membranous adhesions, most extensive in the right posterior quarter of the pelvis.

There are broad ligament cysts, the size of currants, containing clear fluid on the right side.

Uterus.—The sound passes two and one eighth inches. There is a mucous polypus, five eighths of an inch long,

springing from the mucous membrane of the posterior wall near the point of entrance of the left Fallopian tube.

The other morbid conditions found were: *Mitral disease, ascites, œdema of legs, and enlargement of the liver and kidneys.*

The patient was aged 51, married, and had had one child and one miscarriage. She was admitted complaining of pain in the left side and back of six months' duration, and of dropsy. There was a history of excessive beer-drinking.

Case 2. *Right pyosalpinx; left hydrosalpinx and hæmatosalpinx.*—This case is the only one of those brought forward where the actual condition present is open to doubt. It appeared to be a *right pyosalpinx*, with a *hydrosalpinx*, and a *hæmatosalpinx* on the left side. A detailed description of the specimen is given, which seems to warrant this view.

Pelvic organs.—The pelvic viscera are matted together by extensive firm adhesions. Only a small portion of the uterus appears on looking at the pelvic contents from above. The left side of the uterus from the point of entry of the left Fallopian tube is adherent to what at first sight looks like a portion of enormously distended bowel. This adhesion extends over the left longitudinal half of the posterior surface of the uterus. Between the points of entry of the Fallopian tubes there is a mass of fat, the size of a hen's egg, adherent to the fundus. On turning this mass forward, a point is seen behind the uterus, apparently Douglas's pouch. The surface of the pouch thus exposed is covered with sloughy greenish material.

On making a vertical antero-posterior section through the middle of the uterus, what was thought to be Douglas's pouch is seen to be a cavity containing pus, connected with the upper posterior surface of the uterus, chiefly on the right side; and below this is seen what is really Douglas's pouch. The peritoneum of the latter is greenish

and tending to separate from the subjacent tissue, which is infiltrated with watery fluid; but the peritoneum has not lost its lustre. The abscess cavity described communicates with Douglas's pouch by a small aperture. The cavity of the abscess is about the size of a hen's egg.

The mass on the left side (that which at first sight looked like distended bowel) is seen on further examination not to be intestine at all.

On section it is found to have three compartments, one the size of a large orange, one the size of a Tangerine orange, and one the size of a plover's egg. These cavities are shut off from one another. The two larger ones contain a brownish watery fluid, the small one contains a recent "currant-jelly" clot, non-adherent. One of the larger cavities is in communication by a small oval opening with a tube which can be traced a little distance parallel to the left side of the uterus, and is then lost.

Starting from the uterus the left Fallopian tube can only be traced a distance of an inch; and it cannot be traced to the tube just mentioned, leading from one of the cavities containing brown watery fluid. No trace of the ovaries can be found.

It seems most probable that the cavity containing pus, the wall of which is attached to the back of the uterus, and which communicates with Douglas's pouch by a small aperture, is a right pyosalpinx. It seems at all events not unlikely that the case was really somewhat as follows: Right pyosalpinx which burst, setting up acute general peritonitis. As regards the cysts on the left side of the uterus, there is no absolute certainty that they *are* distended tube. No trace of the tube, however, can be found elsewhere, and the external appearance of the mass is similar to that of specimens of dilated tube where no doubt existed.

The other morbid conditions present were:—General purulent peritonitis, old peritonitis, acute pericarditis and right pleurisy, œdema of the lungs.

The patient was 40 years of age; was admitted April

April 17th, 1885, for strangulated hernia (femoral), and discharged, apparently cured, May 8th, 1885.

Re-admitted September, 1885, thought to be suffering from another strangulated hernia—inguinal. At the operation, however, only omentum was found, and on opening the peritoneum it is to be noticed that pus came out. This to some extent confirms the view that the case was one of ruptured pyosalpinx.

The patient died seven hours after the operation.

Case 3. *Double hydrosalpinx. Pelvic organs.*—The upper part of the vaginal mucous membrane is studded with numerous shallow, sharply-defined ulcers. There is old pelvic peritonitis. The upper two thirds of the mucous membrane of the body of the uterus are congested, the lower third is pale. On each side the Fallopian tubes are dilated into cysts the size of hens' eggs, that is the size of the part most dilated, but there are smaller swellings of size intermediate between this and the undilated parts of the tubes. On both sides the swellings communicate freely with the uterus. The distal openings of the tubes are closed. On the right side the ovary can be identified; it is adherent to the part of the right Fallopian tube where this is most dilated. No trace of the left ovary can be found. Both dilated tubes contain clear yellow fluid.

The other morbid conditions present were:—Cirrhosis of the liver, perihepatitis, ascites, right lung small, contracted, pleura adherent, purulent lymph on diaphragmatic pleura.

The patient was 50 years of age, wife of a sailor, and had been a washerwoman thirty years. She was in the hospital four or five years before, suffering from "disease of the uterus." Among her other symptoms it is noted she complained of great pain in the left iliac region.

Case 4. *Double hydrosalpinx. Pelvic organs.*—There are numerous membranous adhesions extending from the

left half of the upper border of the uterus and left broad ligament to the bladder. There are adhesions of omentum to the left broad ligament and posterior surface of uterus. Old adhesions are seen between the adjacent coils of the dilated tubes, and also between the latter and adjacent parts of the uterus, especially the sides and posterior surface. There are old adhesions in Douglas's pouch.

The *right Fallopian tube* is dilated so as to form a swelling one inch in diameter, united to the corresponding ovary by dense adhesions. On opening the dilated tube its contents are found to be turbid, but not purulent. The cavity is closed towards the ovary. A fine bristle passed from the uterus enters the dilated tube with some difficulty.

The *left Fallopian tube* is similarly dilated; a bristle passed from the uterus enters the dilated part easily. The dilated part is closed externally, and is adherent to the ovary.

Other morbid conditions.—There was a small sacculated aneurysm on the posterior aspect of the transverse arch of the aorta, pressing on the trachea half an inch above its bifurcation. The left recurrent laryngeal nerve was compressed.

The patient was 44 years of age, and had suffered from emaciation and attacks of dyspnœa for twelve months; before that her health had been good. Left vocal cord paralysed. Increase of dyspnœa. Tracheotomy. Death.

CASE 5. *Double pyosalpinx.*—The specimen from this case was shown at the meeting of the Society in December, 1885, and a full description of it is published in the 27th volume of the Obstetrical Society's 'Transactions.' Rupture of the tubes was in this case the cause of death.

CASE 6. *Hydrosalpinx (right); hæmatosalpinx (left). Pelvic organs.*—The *left Fallopian tube* is dilated in its outer half, the general dilatation being subdivided into three communicating compartments. The uppermost division is horizontal, the lowest vertical (this latter measures one and

a quarter inches by one inch). The middle division is the size of a grape, and comes off from the lower and anterior surface of the vertical division. The whole of the dilated part of the tube has a chocolate-red colour. Attached to the lower and anterior part of this third (smallest) division just mentioned is a cyst the size of a small grape, not communicating with the dilated tube. The contents of the dilated tube are fluid, and an impulse can be transmitted along it to within an inch and a half of the uterus, but not nearer. The posterior surface of the left broad ligament is studded with small sessile cysts, the largest the size of a large pin-head. One, evidently of the same nature, but larger (one eighth of an inch in diameter) is seen above the undilated part of the Fallopian tube. No trace of the fimbriated extremity of the tube is to be seen. The dilated tube contains chocolate-red fluid; its wall is thin and semi-transparent. There are numerous old adhesions between the left ovary and adjoining broad ligament.

The *right Fallopian tube* is dilated to within one and five-eighths of an inch of the uterus. The dilated part, as on the opposite side, is indistinctly subdivided into three communicating compartments. No trace of the fimbriated extremity of the tube is to be seen. The outer end of the dilated portion is firmly adherent to the ovary. The dilated tube contains thin yellow fluid; its wall is thin and semi-transparent. The largest subdivision of the dilated tube measures one and a quarter inches by one inch. There are minute sessile cysts on the surface of the right broad ligament like those described on the left side. It is not possible to pass bristles from the uterus into the dilated portions of the tubes; whether actually occluded, as seems most likely, or not, they were practically so, as it was impossible by pressure on the dilated tube to drive its contents along the tube into the uterus. There is a partly calcified, subperitoneal fibroid in the anterior wall of the body of the uterus about the size of half a walnut. There are numerous old adhesions on the anterior and posterior

surfaces of the uterus. The cause of death was perforation of the cæcum.

The patient was 48 years of age, and had had six children. She had for a long while suffered from irregularity of the bowels, and there had been absolute constipation for at least ten days before admission. She had constant vomiting for some time before death.

CASE 7.—Both tubes dilated. Contents milky.

Pelvic organs.—Both Fallopian tubes are dilated, containing milky fluid.

The *right tube* appears to be patent towards the uterus, but by a very fine tortuous channel. The outer end is closed. The inner aspect of the dilated part of the tube is moderately smooth for the most part, but here and there are a few large longitudinal ridges, much larger than are usually seen on the inner aspect of dilated tubes. Near the outer extremity on the inner surface of the dilated part of the tube are seen numerous deep-red, solid bodies, some sessile, some polypoid, varying in size from that of a split pea to that of a pin's head. The ovaries are to be seen on both sides.

The left Fallopian tube is similarly affected. There is extensive old pelvic peritonitis.

Other morbid conditions.—Left pleura adherent. Right lung much congested. Capsules of kidneys adherent. Pus in cellular tissue of right leg.

The patient was 50 years of age, married, and had had six children. She had sudden pain in both legs four days before admission. Rigors and high temperature (103°) falling to subnormal before death. The patient had some time back had rheumatic fever, and there was a systolic mitral murmur.

CASE 8. *Pyosalpinx (right).*—Left tube dilated but empty.

Pelvic organs.—There is extensive old pelvic peritonitis, almost wholly limited to an area posterior to the round ligaments. The right posterior quarter of the pelvis is

occupied by a swelling, smooth, round, and elastic, the size of a Tangerine orange. On dissection this is found to be a pyosalpinx of the right tube. Its cavity is not open towards the uterus, nor externally. The right ovary is found attached to the anterior aspect of the swelling. In the left posterior quarter of the pelvis the left Fallopian tube is found dilated, but not, at the time of examination, distended; there are dense adhesions between the tube and ovary; the fimbriated extremity of the tube is not to be found.

Uterus.—The sound passes two and a quarter inches. The external os is transverse one eighth of an inch across. The mucous membrane of the cervix and body of the uterus is of a white colour.

Other morbid conditions.—Enlarged liver and spleen; both tough and homogeneous. In the hilum of the spleen is a tract of dense cicatricial tissue with buff-coloured nodules, (?) gummata. Caseous masses in apex of left lung; a small angular calculus in pelvis of kidney.

The patient was 41 years of age, and had been twice married, but had had no children; she had a miscarriage once, when three months pregnant. There was a history almost certainly pointing to syphilis.

Case 9. *Right pyosalpinx.*—Left tube also dilated, containing brown watery fluid.

Pelvic organs.—There is old pelvic peritonitis; there are adhesions between the uterus and bladder as well as elsewhere.

The *left Fallopian tube* is dilated at its outer part. The dilatation makes a C-shaped bend with the concavity inwards, the adjoining borders of the C being limited by adhesions so as to form altogether an oval swelling three inches long and two inches broad. This lies in Douglas's pouch; there are numerous adhesions between it and the rectum and adjoining parts of the pouch, but they are so disposed as to allow of the mass being displaced out of the pouch. The fimbriated extremity cannot be distinguished.

The *left ovary* is seen beneath a broad membranous adhesion stretching from the left side of the fundus uteri to the inner border of the dilated tube. The outer end of the left ovary is firmly adherent to the tube.

The dilated left Fallopian tube contains a brown watery fluid; communication between it and the uterus is not shut off, but the channel about an inch from the uterus is extremely narrow and tortuous, admitting only a very fine bristle. The lining of the dilated portion of the tube has a pale, whitish colour.

The *right Fallopian tube* is also dilated, but forms a smaller swelling than the left. The dilated tube contains pus, and the lining of the cavity is of a deep purple colour. The tube does not communicate with the uterus. There is a swelling between the right ovary and the pyosalpinx on that side. It is separate from the tube, and contains a turbid yellow fluid. Its interior is not like that of a dilated tube, and it seems pretty certainly to be a small ovarian cyst.

Uterus.—The external os is five sixteenths of an inch across. The sound passes two and a half inches. The mucous membrane of the body of the uterus is creamy white, and covered with a reddish mucus. The mucous membrane of the cervix is slate grey.

Other morbid conditions.—Pericarditis; copious pleural effusion with carnified lung; lymph also at right base. The patient was 27 years of age. She had had dyspnœa and pain in the left side for three days. There were on admission physical signs of pleurisy with effusion; the heart's apex-beat was displaced downwards, to the right.

Case 10.—Left tube dilated, containing milky fluid. There is old pelvic peritonitis, viz. between the posterior surface of the uterus and the rectum, between the anterior surface of the uterus and the bladder, and laterally more or less between the structures projecting from the broad ligaments.

Left Fallopian tube.—The fimbriated extremity is not to be found. The outer end of the tube is firmly adherent to the ovary. The outer part of the tube is dilated so as to form a swelling three quarters of an inch in diameter. It contains a milky fluid. The tissue of the left ovary next the dilated part of the tube forms a dense white layer one eighth of an inch thick.

The finest bristle is needed to pass from the dilated part towards the uterus, and it can only be passed little by little, the canal of the tube being opened up as it is passed, so that, though the lumen of the tube is not absolutely, it is practically obliterated.

The *right Fallopian tube* is normal.

Uterus.—Sound passes one and seven eighths of an inch.

Other morbid conditions.—Cavities at apices of both lungs; kidneys granular; liver fatty.

The patient was 49 years of age, had been married twenty-two years, but had had no children or miscarriages. She was the wife of a sailor, and had been ill with lung mischief for five years.

Case 11.—Both tubes dilated.

Pelvic organs.—There is old pelvic peritonitis. The surface of the broad ligaments is studded with cysts the size of pins' heads. The fimbriated extremities of both tubes are patent. There are cheesy masses, the largest being the size of a cob-nut, in both Fallopian tubes.

The patient was 62 years of age and died of "dropsy."

Case 12.—Both tubes dilated, containing blackish watery fluid.

Pelvic organs.—The *right Fallopian tube* is dilated so as to form a swelling three fourths of an inch in diameter, open towards the uterus but closed externally. No trace of the fimbriated extremity can be found.

The *left Fallopian tube* is similarly affected. Both dilated tubes are somewhat flaccid, not tense. The lining membrane of the dilated portion of each tube is pale grey. The dilated tubes contain blackish watery fluid.

There is extensive old pelvic peritonitis involving the vesico-uterine pouch as well as other parts. Here and there are small accumulations of serous fluid imprisoned amid the adhesions.

Uterus.—The external os admits the tip of the finger. There is a narrow deep-red erosion round it. The sound passes two and three quarter inches. The lower quarter of an inch of the cervical mucous membrane is red, continuous with the erosion. The upper part of the cervical mucous membrane is pale. The arbor vitæ is well marked. The mucous membrane of the body of the uterus is red, and covered with a reddish mucus. On section, the red layer is seen to be of only linear depth.

The *ovaries* are almost inextricably bound by adhesions to neighbouring parts, but ovarian tissue can be distinctly recognised on both sides.

The *bladder* is dilated, measuring about four and three quarter inches from the inner orifice of the urethra. Its mucous membrane is marked by arborescent injected vessels. The bladder contains puriform fluid.

Other morbid conditions.—Thickening of mitral valve; dilatation and hypertrophy of left ventricle; convolutions of brain flaccid; no hæmorrhage; white softening.

The patient was 41 years of age, she was the wife of a schoolmaster, and had married at 22. Had had rheumatism; there was evidence of mitral regurgitation with cardiac hypertrophy and dilatation during life. She had a sudden attack of general convulsions and cyanosis, and died.

CASE 13.—Both tubes dilated. *Contents:* Left side milky fluid; right side, dilated tube empty.

Pelvic organs. Uterus.—The sound passed three and a half inches. There is a fibroid measuring one and a quarter inches transversely by three quarters of an inch vertically in the anterior wall of the uterus. It slips about under the peritoneum on manipulation.

On opening the uterus a mucous polypus, one and five

eighths of an inch long by half an inch broad, is seen attached to the mucous membrane of the posterior wall of the body of the uterus. Its attachment is three quarters of an inch long and is narrow. The attachment is below the uterine end of the right Fallopian tube. On section numerous little points of green fluid are seen in its substance.

Two mucous polypi, the size of a threepenny piece, are also seen, one on the posterior and one on the anterior wall of the body of the uterus near the opening of the left Fallopian tube. The mucous membrane of the body of the uterus has a yellow colour.

On the left side of the uterus is a swelling two and three quarter inches in diameter, obviously containing fluid.

The left Fallopian tube is traced to the upper and anterior aspect of this. There it makes a C-shaped bend, the tube here being an inch in diameter, and ends on the swelling already mentioned.

Below, the wall of the cyst is formed by a white tissue continuous internally with the ovarian ligament. The fimbriated extremity of the left tube cannot be found.

The *right Fallopian tube* is also dilated to form a swelling one inch across; its fimbriated extremity is not seen.

The right ovary is easily distinguishable in its usual position, but matted by adhesions to the tube. The dilated tube on this side is not tense.

Further examination shows that on the right side the dilated tube communicates freely with the uterus, a bristle passing easily into it from the uterus. It is noticeable that on this side the dilated tube was empty.

On the left side the large swelling described contains a white viscid fluid. Its cavity communicates freely with the other less dilated part of the tube, and from this again a bristle can be passed to within three quarters of an inch of the uterus.

The dilated left tube, internal to the larger swelling, is an inch across.

Part of the wall of the large swelling on the left side is

thick, an eighth of an inch, part is thin. The inner surface of the swelling where the wall is thin shows the longitudinal and somewhat parallel rugæ seen on the inner surface of the dilated tubes. The inner surface, where the wall is thick, is smooth.

No trace of the left ovary is to be found. As the left ovarian ligament is traced to the inner aspect of the larger swelling mentioned, it seems probable that though part of this swelling is certainly formed by the Fallopian tube, part of it is formed by a small ovarian cyst.

The patient was 59 years old, a dressmaker; she had been married many years, and had had five miscarriages but no living children. She had been in the hospital several times before, once for hernia, and several times for chest complaints. This time she was admitted for pleuro-pneumonia and jaundice, and died in three days.

CASE 14.—*Right hæmatosalpinx.*

Pelvic organs. Right side.—The fimbriated extremity of the tube cannot be found, the outer end of the tube being inseparably fixed to the ovary. About two inches from the uterus the tube expands so as to form a swelling three quarters of an inch in diameter. On opening this swelling it is found to contain blood. It is not absolutely shut off from the uterus, but the channel of communication is very narrow.

Left side.—There are numerous adhesions between the anterior surface of the ovary and the posterior part of the Fallopian tube. The fimbriated extremity of the latter is normal, and on squeezing the tube towards it blood exudes.

Uterus.—The sound passes three and one eighth inches. The mucous membrane of the body of the uterus is disintegrating in patches.

There is old pelvic peritonitis. Thin adhesions are seen between the right round ligament and the upper surface of the bladder. There are adhesions also in Douglas's pouch.

The patient was 32 years old; she had had four children (two stillborn), and died of acute pneumonia.

Case 15.—Both tubes dilated, containing viscid, creamy-white fluid.

Pelvic organs.—There is old pelvic peritonitis in the vesico-uterine pouch. Both Fallopian tubes are dilated, and hang down in Douglas's pouch, united by membranous adhesions to the back of the uterus.

The *right Fallopian tube* forms a swelling seven-eighths of an inch in diameter. Its fimbriated extremity is not seen, the outer end of the tube being inextricably blended with the ovary. The latter was not visible at first, being hidden by the dilated tube hanging over it, and by adhesions between the tube and the uterus.

The dilated tube contains a creamy-white viscid fluid. It is doubtful whether its cavity is altogether shut off from the uterus, but at all events the channel of the tube towards the uterus becomes so narrow that even with a fine bristle it cannot be traced.

The *left Fallopian tube* is similarly affected, but at its widest part is only half an inch across.

Uterus.—The sound passes two and five eighths inches. The external os is five sixteenths of an inch across. There is a soft polypus half an inch long growing from the cervical mucous membrane. There is a second similar polypus, the size of a split pea, at the fundus. There are ovules of Naboth in the cervix, and in the body of the uterus near the fundus is a cyst exactly like an ovule of Naboth. There is a calcified, sessile, subperitoneal fibroid, one inch in diameter, on the anterior surface of the uterus to the left of the middle line.

The patient was 54 years old; she had been married thirty-seven years, and had had four children and three miscarriages. Thirty years ago she was in the hospital, under Dr. Ramsbotham, "with inflammation of the womb" for four months. She had had pain in the lumbar region for seven months before death, which was due to "spinal disease." Menstruation ceased at forty-five; but she had been subject to a copious "discharge from the womb" ever since.

CASE 16.—*Left pyosalpinx.*

Pelvic organs.—There is old pelvic peritonitis. There are numerous thin adhesions between the anterior surface of the uterus and the posterior part of the bladder. There are also some less extensive old adhesions in Douglas's pouch. The fimbriated extremities of the tubes cannot be made out, the outer end of each tube being firmly attached to the corresponding ovary.

Left Fallopian tube.—Immediately outside the uterus the left tube dilates to form a swelling measuring half an inch from before back, and one inch in vertical measurement. The dilatation ceases abruptly one and a quarter inches from the uterus. The calibre of the tube for the next one and five-eighths of an inch is normal; it then dilates to form a second swelling measuring one and a quarter inches long by half an inch broad, the tube ending by being firmly adherent to the ovary. On section the inner swelling is found to have two compartments filled with green pus. There is no communication between this cavity and the uterus, or between it and the undilated part of the tube immediately outside it. The outer swelling contains milky fluid, also shut in on both sides.

Right Fallopian tube.—There is a swelling in the course of the tube about the size of a grape distant three quarters of an inch from the corresponding ovary. On section it is found to contain several hard white bodies, the size of small shot. It cannot be exactly made out whether the cavity containing these white bodies is a dilated portion of the Fallopian tube or not. As the tube, however, cannot be traced past this cavity, it seems probable that it is a localised dilatation of the right Fallopian tube.

The *uterus* is somewhat acutely anteflexed. The external os is that of a virgin uterus. There is no real obstruction at the angle of flexion, the direction of the canal only being altered without obstruction to its channel.

The patient was 32 years of age, a needlewoman, married, and had no children. Had never had any

serious illness till a fortnight before admission, when she was seized with pain in the head and shivering. She had some kind of fit. She was delirious on admission, and died in six days. Evidence of tubercular meningitis was found on post-mortem examination.

Case 17. *Double hæmatosalpinx.*—Both Fallopian tubes are dilated. There are membranous adhesions between the distended tubes and the posterior surface of the uterus.

Right Fallopian tube.—The outer part of the tube is most dilated; its diameter at the widest part is one and five-eighths inches.

The *left Fallopian tube* is similarly affected, but it is not quite so much dilated as the right, being only one and a quarter inches wide. Both the dilated tubes contain blood, and both are open towards the uterus, but closed at their outer extremities. No trace of the fimbriated extremities can be found.

Uterus.—The sound passes two and seven eighths inches. The external os is three sixteenths of an inch across. On opening the uterus the mucous membrane of the cervix is seen to be greyish green in colour. The body of the uterus is lined by a menstrual decidua, which, on section, is seen to be about three sixteenths of an inch thick above, thinning off gradually towards the internal os, where it is lost. There are two broad ligament cysts on the left side; one is the size of a currant, and is attached by a thin stalk to the anterior surface of the left dilated tube at its outer part; the other is the size of a small grape, and is in the thickness of the broad ligament near the attachment of that just mentioned. The ovaries are easily distinguishable on both sides.

The patient was 29 years of age. She died after two days' illness, it was believed of phosphorus poisoning. There is no record as to whether she was married, or had had children. It is stated in the notes that menstruation had been regular.

Remarks.—It will be seen on classifying the cases that *five were cases of pyosalpinx.* On reviewing them *seriatim* we find that: In one case (No. 5) there was double pyosalpinx. In two cases (Nos. 8 and 16) the pyosalpinx was unilateral. In one case (No. 2) the pyosalpinx was combined with hydro- and hæmato-salpinx of the opposite side, and in one case (No. 9) there was hydrosalpinx of the opposite side.

Four were cases of hæmatosalpinx. Of these, in one case there was double hæmatosalpinx (No. 17). In one case there was right hæmatosalpinx (No. 14). In one case there was hydrosalpinx of the opposite side (No. 6), and in one case (No. 2) there was hydrosalpinx of the same side, and pyosalpinx of the opposite side..

Hydrosalpinx alone, uncombined with pyo- or hæmatosalpinx, was found in eight cases. In six of these the condition existed on both sides (Nos. 3, 4, 7, 12, 13, 15). In two cases it was unilateral (Nos. 1 and 10).

In one case the dilated tubes contained cheesy masses. This should probably be classed as a pyosalpinx that had undergone natural cure.

Taking as the essential characters of a normal Fallopian tube the presence of an open fimbriated extremity, and of a channel in communication with the cavity of the uterus, it will be seen that in only two cases (of those where one tube only was dilated) could the opposite tube be described as normal (Nos. 10 and 14).

This fact is significant as indicating that the cause of tubal disease is one which, except it may be for accidental circumstances, tends to affect both tubes equally.

Inflammation of the lining membrane of the uterus would be a cause of this kind; that is, one which, at starting, would tend to spread equally to both tubes.

When inflammation has spread along the Fallopian tube to its outer opening, the fimbriated extremity of the tube will be obliterated by the adhesive peritonitis set up in its vicinity.

Whether, subsequently, the tube becomes dilated or

not seems, to a certain extent, to be a matter of accident, and to depend on whether a free communication is maintained with the uterus or not.

Looking at the ages of the patients from whom the specimens were taken, we find that the youngest was 18, the oldest 62. The average age is 42·8.

In ten cases a record as to whether the patient had had children or not was obtained. In three of these the patient had had neither children nor miscarriages; in seven she had had either children or miscarriages, as follows:

	Children.		Miscarriages.
Case 1	1	...	1
„ 6	6	...	0
„ 7	6	...	0
„ 8	0	...	1
Case 13	0	...	5
„ 14	4	...	0
„ 15	4	...	3

In seven cases no information on this point could be obtained.

In those cases where the women had had children or miscarriages, obliteration of the tubes, when bilateral, as it was in six out of the seven cases referred to, must have been subsequent to the last pregnancy.

Probably in these cases the sequence of events was this: endometritis in connection with the last labour or abortion, salpingitis, pelvic peritonitis, and obliteration of the fimbriated extremities of the tubes. But endometritis arising apart from labour or abortion may cause salpingitis, and it may be either of gonorrhœal or of simple origin.

That pyosalpinx may arise where labour, abortion, and gonorrhœa are definitely excluded is proved by a case within my own knowledge (but not in this series), where when the patient came under observation the hymen was perfect, and was torn when at length vaginal examination was resorted to. Abdominal section being subsequently performed by the physician under whose care the patient was, a pyosalpinx was found.

As regards the size of the swellings formed by dilated tubes: In the series of specimens described in this paper it varied from that of a large orange (Case 2, the maximum) to that of a cob-nut in Case 11, where cheesy masses were found in the tubes. It is noticeable that the largest specimen in the series is also the only one where any doubt existed as to the tumours really being dilated tubes. I think everyone who has examined a specimen as large as a large orange, or larger, with a view to decide if it be a dilated tube or not, will admit the great difficulty, and in many cases the impossibility, of coming to any certain conclusion. When there are swellings of this size at the sides of the pelvis, glued into a mass by adhesions of ligamentous consistence, it is useless to expect to be able to trace the continuity of the Fallopian tube from the uterus, and the only reason for supposing the swellings to be dilated tubes must be failure to find any other trace of the tubes.

It might be thought that finding the ovaries would aid in deciding the point at issue, and so no doubt it would, if they could be found. In such cases, however, as have been referred to, no trace of the ovaries can usually be seen. And, if it is difficult on careful dissection out of the body to decide in such cases on the nature of the tumour, it must be almost impossible in the case of the larger swellings to come to any certain conclusion during an abdominal section.

In fourteen out of the seventeen cases both ovaries could be distinctly recognised; in one case (No. 2) no trace of either ovary could be found; in one case (No. 3) the right ovary was found, but the left could not be found; in one case (No. 13) the right ovary was recognised, and the left probably formed part of the cyst described in the notes of the specimen.

As to the possibility of removing such diseased tubes as those in the series of cases recorded in this paper: In one case (No. 2) removal of the tubes during life by operation would have been absolutely impossible; in one case (No.

16), owing to the position of the diseased tube it could only have been removed by removing at the same time the body of the uterus; in the remaining fifteen cases removal of the diseased tubes would have been possible in all, and easy in most.

The general morbid conditions, associated with the local disease, present so much diversity as to throw no light on the etiology or pathology of dilatation of the Fallopian tube.

As regards the local morbid conditions found associated with dilatation of the tubes:

In *all* the cases there was pelvic peritonitis. In three cases (Nos. 1, 13, 15) there were mucous polypi. In three cases (Nos. 6, 13, 15) there were subperitoneal fibroids.

In only six cases was there anything observed which could be regarded as an indication of inflammation of the mucous membrane of the uterus or vagina. Thus in Case 3 there were ulcers of the vaginal mucous membrane, and the upper part of the mucous membrane of the body of the uterus was congested.

In Case 5 the mucous membrane of the body of the uterus was greenish. In Case 9 the mucous membrane of the cervix was slate grey. In Case 12 there was a deep red erosion round the external os, and the mucous membrane of the cervix for a little way upwards was red. In Case 13 the mucous membrane of the body of the uterus was yellow. In Case 17 the mucous membrane of the cervix was greyish green. It is noticeable that in none of the cases was there malignant disease of the pelvic or other organs.

As regards the existence of communication between the dilated tubes and the cavity of the uterus:

In Cases 3, 4, 5, 7, 10, 12, 14, 17, the dilated tubes communicated with the uterus. In Cases 1, 2, 6, 8, 15, 16, the dilated tubes did not communicate with the uterus. In Cases 9 and 13 (cases where the tubes were dilated on both sides) there was communication with the uterus on one side, but not on the other.

In one case (No. 5) rupture of the tubes was the cause of death, and in all probability the same is true of Case 2. These were both cases of pyosalpinx.

It seems very doubtful whether any sharp line of demarcation should be drawn between cases of hydro-salpinx and pyosalpinx; or whether they should not rather be regarded as stages of the same disease. This view is borne out by the fact that in some of the cases the contents of the dilated tubes were not clear fluid and were not pus, but were milky, occupying, as it were, an intermediate position.

It seems probable that hæmatosalpinx is the result of an accidental hæmorrhage into a tube, the fimbriated extremity of which has been previously obliterated, or in some cases into a pre-existing hydro- or pyo-salpinx.

Note.—None of the seventeen cases of dilated tubes came from the obstetric wards of the hospital, though some of the 100 cases examined came from those wards. On this point I should like to say that unless I could get the pelvic organs in a complete condition for examination I did not include them in my series, and it is within my recollection that some fatal cases of abdominal section, certainly one, and I think two or three others, were not included in my list because the organs were not in a complete state. One of these was, to the best of my recollection, a case where a diseased tube had been removed. The 100 cases were taken as nearly as possible consecutively. At the London Hospital, as elsewhere, cases occur where no post-mortem examination is allowed; these of course had to be omitted. In a very few cases where, for instance, the post-mortem examination was made at an unusual time a case was missed occasionally. The series, however, was as consecutive as practically any such series can be.

Case.	Age.	Children.	Miscarriages.	Size of tumour.	Contents of dilated tube.	Communication between dilated tube and uterus.	Possibility of removal.	One or both tubes dilated.	Ovaries recognisable or not.	Pelvic peritonitis.	Mucous polypi.	Fibroids of uterus.	Condition of uterine mucous membrane.	General morbid conditions found.
1	51	1	1	Large walnut	Clear yellow fluid	Closed	Could have been easily removed	Left only	Both seen	Present	1 present	None	—	Mitral disease, ascites, œdema of legs, enlargement of liver and kidneys.
2	40	No note	No note	Large orange	*Right*, pus. *Left*, blood and brown watery fluid	„	Absolutely impossible to have removed them	Both	No trace of either seen	„	None	„	—	General purulent peritonitis, acute pericarditis, right pleurisy, œdema of lungs.
3	50	„	„	Hen's egg	Clear yellow fluid	Open	Removal possible	„	Right found; left not found	„	„	„	Upper two thirds of uterine mucous membrane congested, lower third pale, ulcers in vagina	Cirrhosis of liver, peri-hepatitis, ascites, pleurisy.
4	44	„	„	1 inch in diameter	Turbid fluid, not purulent	„	„	„	Both seen	„	„	„	—	Aortic aneurysm.
5	18	0	0	Dilated tube. Had burst	Pus	„	„	„	„	„	„	„	Greenish	General peritonitis.
6	48	6	0	*Left*, 1½ in. × 1 in. *Right*, the same	*Left*, blood. *Right*, thin yellow fluid	Closed	„	„	„	„	„	Present	—	Perforation of cæcum.

7	50	6	0	—	Milky fluid	Open	„	„	„	„	„	None	—	Left pleura adherent, capsules of kidneys adherent, cellulitis right leg.
8	41	0	1	Tangerine orange	*Right*, pus. *Left*, empty	Closed	„	„	„	„	„	„	—	Enlarged liver and spleen probably syphilitic, caseous masses apex left lung.
9	27	No note	No note	*Left*, 3 ins. long and 2 ins. broad. *Right*, rather smaller	*Right*, pus. *Left*, brown watery fluid	Open one side closed the other	„	„	„	„	„	„	Mucous membrane of cervix, slate grey	Pericarditis pleurisy with effusion.
10	49	0	0	¾ inch in diameter	Milky fluid	Open	„	Left only	„	„	„	„	—	Cavities apices of both lungs, kidneys granular, liver fatty.
11	62	No note	No note	Size of cob-nut	Cheesy	Doubtful	„	Both	„	„	„	„	—	" Dropsy."
12	41	„	„	Both ¾ inch in diameter	Blackish watery fluid	Open	„	„	„	„	„	„	Erosion around external os, adjoining mucous membrane of cervix red	Morbus cordis.
13	59	0	5	*Right*, 1 inch in diameter. *Left*, the same	*Right*, empty. *Left*, milky fluid	Open one side, closed the other	„	„	Right found. Left probably formed part of cyst described	„	Present 1 large one, 2 smaller	1 present 1½ × ¾ inch	Yellow	Pleuro-pneumonia, jaundice

Case.	Age.	Children.	Miscarriages.	Size of tumour.	Contents of dilated tube.	Communication between dilated tube and uterus.	Possibility of removal.	One or both tubes dilated.	Ovaries recognisable or not.	Pelvic peritonitis.	Mucous polypi.	Fibroids of uterus.	Condition of uterine mucous membrane.	General morbid conditions found.
14	32	4	0	*Right*, ¾ inch in diameter	Blood	Open	Removal possible	Right only	Both seen	Present	None	None	—	Acute pneumonia.
15	54	4	3	*Right*, ⅓ inch in diameter. *Left*, rather smaller	Viscid creamy fluid	Closed	,,	Both	,,	,,	Present 1 in cervix, 1 at fundus	1 present an inch in diameter, partly calcified	—	"Spinal disease."
16	32	0	0	*Left*, 1½ in. × ½ inch	Pus	,,	Only possible if body of uterus removed at same time	Left only	,,	,,	None	None	—	Tubercular meningitis.
17	29	No note	No note	*Right*, 1⅛ in. in diameter. *Left*, 1¼ inch	Blood	Open	Removal possible	Both	,,	,,	,,	,,	Mucous membrane of cervix greyish green	Believed to have died of phosphorus poisoning.

Dr. GALABIN thought that Dr. Lewers' paper was of very great value as an addition to the evidence on the subject already published by Dr. Kingston Fowler. He wished to ask Dr. Lewers whether the 100 cases recorded were to be regarded as equivalent to 100 consecutive cases without selection, or whether his attention was in any way attracted to cases where pelvic mischief was likely to be found. He thought the proportion of cases of distension of the Fallopian tube, 17 per cent. of all autopsies on women, must be above the general average, if he might draw any inference from the experience of Guy's Hospital. He had had occasion to go over all the post-mortem records at Guy's Hospital for the three years ending with 1886. During this time the pathologists had been specially on the look-out for diseases of the Fallopian tubes. There were 302 autopsies of women above the age of puberty. In these there were twelve cases of distension of the tube, in two of which the distension was of trivial amount, the lumen not being larger than a lead pencil. This was a proportion of only about 4 per cent. The relative frequency of pyosalpinx was still smaller. There were only two cases, including one in which the pathologist was uncertain whether two unilocular symmetrical suppurating sacs were tubes or ovaries. The tubes were lost upon the sacs close to the uterus, and the ovaries could not be found. The case was thought to be one of ovarian tumour, and abdominal section was performed. The operator could not remove the sacs, and stitched them to the abdominal wounds. The case ended fatally. There were fourteen cases of chronic inflammatory disease about the Fallopian tubes, without distension. Out of the whole twenty-six cases there were seven in which it appeared probable that the pelvic inflammation was indirectly the cause of death, through the medium of general peritonitis, intestinal obstruction, or in other ways. These included the two cases of pyosalpinx, one of hydrosalpinx, and four of chronic inflammatory disease without distension. There was no case in which the tube was ruptured, and none in which it could be said that the chronic distension of the tube in itself led to the fatal result, except the one already described in which abdominal section was performed. Thus, in these 302 cases, chronic inflammatory disease about the tubes was found in about 9 per cent., distension of tubes in about 4 per cent., death had probably indirectly resulted from perimetric inflammation in about 2·3 per cent. Such a fatal result from perimetric inflammation was, in these 302 cases, as common when the tubes were not distended as when they were.

Mr. TAIT said, in speaking about Dr. Lewers' paper, that he found it difficult, indeed impossible, to express in words his sense of its immense value; coming, as it did, at the present juncture, such a research could not be regarded as of anything but the highest importance, and conducted as it had been in a method

which was at once precise and scientific as well as properly speculative, it was indeed a remarkable paper. He found that Dr. Lewers' conclusions, derived from the post-mortem table, both as regards the causation of these diseases, their progress, their prognosis and their treatment, were absolutely identical with those which he had been preaching for at least ten years on the basis of his clinical experience, and there were many things that he would like to speak of, but his difficulty was to find matters upon which there could be disagreement. He confessed it was a staggering thing to him to find that 17 per cent. of the women who died in the London Hospital had more or less pronounced evidences of suffering from the presence of chronic inflammatory disease of the Fallopian tubes, though not practically the immediate cause of death in every one of them. But he must point out that this did not by any means include the whole of the field of research, for from clinical observations he was perfectly satisfied that the cases which suffered most and which stood most in need of surgical interference were those in which the tubes were occluded and distended. Indeed, the stories of the most acute suffering which he had received from patients were the cases in which there had been adhesions formed between the ovaries and tubes to the surrounding viscera, more particularly the peritoneal layer lining Douglas's pouch, resulting ultimately in complete retroversion of the uterus with its appendages, and forming one of the most dreadful conditions which the gynæcologist ever had to deal with. When these organs were removed it was difficult for any unskilled pathologist to see that there was anything the matter with them, whilst clinically these were the most dreadful cases. Such cases Dr. Lewers had not included in his table, and yet with such experience as he had had in tubercular disease these cases must have been somewhat numerous, and should be included in any future research. But to exclude these and to take the matter as it was evidenced in Dr. Lewers' 17 per cent. was a staggering indication of the prevalence of diseases of the uterine appendages, and was a very significant reply to Dr. Coe's curious question. He could not but feel, however, that there was some kind of explanation by which the larger group of cases at the London Hospital, and the relatively small group at Guy's, could be explained, and he thought that some kind of explanation must be sought for in locality. He thought that in all probability the conditions which give rise to these diseases, such as gonorrhœa and pelvic inflammation after labours or miscarriages, would in all probability be more common in the poorer population of the east of London than in the relatively more respectable population which surrounded the hospital on the south side of the river. Speaking for his own locality he had come to the conclusion, after a very careful research, that about 10 per cent. of the women who applied for relief at the out-patient department

suffered from chronic inflammatory disease of the uterine appendages. By that he did not mean to say that all these cases required operation, but that was about the proportion in which the cases occurred. A still more staggering conclusion to be derived with perfect certainty from Dr. Lewers' table was the enormous fatality of these diseases. Dr. Lewers was disposed to regard only two of the patients as having had their death directly due to the disease, but it certainly was open to belief that another two of the cases, that is, four in all, died from the presence of pus in their uterine appendages. Taking the latter view, the mortality of the disease at the London Hospital, so far as already ascertained, was 24 per cent; and this conclusion was remarkably sustained by the utterances which had fallen from the lips of Dr. Galabin concerning the experiences at Guy's, where the mortality seems to be 25 per cent. For years he (Mr. Tait) had been arguing in favour of operations for these diseases, not so much on account of their intrinsic mortality, although he regarded that as very serious, but on account of the terrible suffering to which they give rise, for he had regarded it as a much higher function for the medical profession to relieve pain than to save life. But when it came to be displayed by the careful pathologists in three large London hospitals (including the experiences of Dr. Kingston Fowler at Middlesex), that these diseases have a mortality which seems to run between 24 and 50 per cent., the cry for relief by surgical interference was one which could not be gainsaid; for he had shown over and over again that it was possible to deal with these cases by operation with a mortality not exceeding 2 or 3 per cent., and this was his result over a series of some hundreds of cases. Another matter he would point out as deserving of clearer evidence when any further investigation was made, that is, the question of sterility. It was not an easy matter to obtain the clinical history in cases where the disease was first discovered on the post-mortem table, but such simple information as the number of years during which a patient had been sterilised, as evidenced by the period between the occurrence of her death and the birth of her last child, would yield very important information; for he found that many of his cases had rested in a condition of sterility for years before the necessity for operation came to the surface. This led to another remark, indeed it was a conclusion that he had already arrived at, that the existence of hydrosalpinx, as Dr. Lewers suspects, seems the precedent of pyosalpinx. Personally, he must thank Dr. Lewers for the remarkable confirmation which he had yielded by this patient pathological investigation to conclusions which he (Mr. Tait) had already advanced on clinical grounds. These conclusions had been met with a very large amount of incredulity, but they had steadily gained access to professional belief, which no longer could be denied to them in any quarter whatever.

Dr. Horrocks was surprised at the large percentage of disease in the Fallopian tube shown in the table of cases. He asked if Dr. Lewers could show the specimens. The title of the paper was misleading, because the investigation had been limited to particular pathological conditions. At Guy's Hospital, in conjunction with the pathologists, he had been investigating this subject for several years and had been struck with the fact that in many cases the disease had apparently begun in the ovary and glued the fimbriated extremity to itself and thus led to pathological conditions in the tubes. No doubt in some instances the affection was the result of inflammatory processes spreading from the vagina to the uterus and from the latter into the tubes. In all his cases there was peritonitis, but in nearly every instance it was a chronic and effete process, indicated merely by old fibrous bands of adhesion.

Mr. Alban Doran noted that it was remarkable to find severe forms of tubal disease, such as hydrosalpinx, so frequent. It must be assumed that milder forms were yet more common. Simple catarrh of the tube must involve discharge, and the discharge probably escaped into the uterine cavity so gradually as not to produce symptoms. It was not likely that the discharge escaped through the ostium into the peritoneal cavity, else hydroperitoneum would be more frequent. In a case described in Mr. Doran's paper on 'Papilloma of the Tube,' in the last volume of the Society's 'Transactions,' the escape of a bland mucoid fluid from the ostium caused hydroperitoneum and hydrothorax. The severe forms of tubal disease with local peritonitis showed how the tubes were a highway from the exterior into the peritoneum. Their frequency amidst the East-end women suggested that they arose more from extension of neglected leucorrhœa and gonorrhœa than from abuse of operative measures, sounding, or syringing. Disease of the tubal mucous membrane was more probably caused by the passage of diseased fluids upwards than by direct extension of inflammation from the vaginal or uterine mucous membrane. Direct extension might occur, but mucous inflammations were generally localised in the genital just as in the respiratory tract.

Dr. Imlach regarded the paper as an important contribution to our knowledge of the relative frequency of inflammatory diseases of the Fallopian tubes. He trusted the investigation would be continued by Dr. Lewers and by others, and that, in future, pathologists would scrutinise the ovaries and tubes at least as carefully as they did the kidneys and ureters. By the labours, mainly, of surgeons the pathological varieties of tubal inflammation were fairly established, but our knowledge of oöphoritis was still fragmentary. The value of post-mortem examinations would be enhanced by a description of the organs *in situ*, of the condition of the peritoneum and its contents, and by a careful

search for vaginal, intestinal, and vesical fistulæ. The gonorrhœal origin of these diseases was often assumed without evidence, and he agreed with Dr. Horrocks that tubal disease might be set up by pathological discharges from the ovaries. He had examined a considerable number of women in two lock hospitals but had not found a single example of pyosalpinx amongst them. This question in etiology was important, and it could only be settled by clinical investigation of a large series of gonorrhœal patients.

Dr. MATTHEWS DUNCAN felt the want of further information regarding Dr. Lewers' cases. This feeling did not diminish his sense of the great value of the observations as they were recorded. He desiderated information as to the symptoms, if any, caused by the pathological conditions; and he supposed that in many there were no symptoms to direct attention to the pelvis. He desiderated, further, information as to the condition of obsoleteness in the cases, for it was probable that in many the pathological conditions were obsolete and evidence only of past, long past, disease. This view was strongly confirmed by the high ages of the patients. Mr. Tait had said that these cases ranged from twenty-seven to thirty or thereabout in his practice; and Dr. Lewers' cases were above forty on an average and many quite old. He (Dr. Matthews Duncan) was not astonished at there being evidence of disease in 17 per cent. of the post-mortems, for he had long known that evidence of disease, past or present, was a very frequent occurrence in the region of the uterine appendages. The President had wisely kept the discussion to the matter of the paper, excluding practice, and he would only say that there were evident practical bearings. Cases 2 and 5 had died directly from disease in the appendages. But the interval between such a pathological paper as that of Dr. Lewers' and practical deductions was immense.

Dr. WILLIAM DUNCAN thought it remarkable and most important that of the seventeen cases of tubal disease recorded in Dr. Lewers' valuable contribution, fourteen were over forty years of age; in only one single case were definite pelvic symptoms given in the previous history, and almost all died from diseases not attributable to the tubal mischief, thus showing the fallacy of the view that most cases of tubal disease necessitate laparotomy.

In reply to the President's question, Dr. LEWERS said that none of the seventeen cases in his series came from the obstetric wards, though some of the 100 cases examined came from those wards. On this point, however, he should like to say that unless he could get the pelvic organs in a complete condition for examination he did not include them in his series; and it was within his recollection that some fatal cases of abdominal section, certainly one, and he thought two or three others, were not

included in his list, because the organs were not in a complete state. One of these was, to the best of his recollection, a case where a diseased tube had been removed. In reply to Dr. Galabin, he had to say that the investigation was completed in a period of thirteen months and the cases were as nearly as possible consecutive. At the London Hospital, as elsewhere, cases occurred where no post-mortem is allowed, and these, of course, had to be omitted; in a very few cases where, for instance, the post-mortem examination was made at an unusual time, a case was missed occasionally. The series, however, was as consecutive as practically any such series could be. In reply to Mr. Lawson Tait, among the 100 cases examined there were many, not included in this list of seventeen cases, where more or less extensive old adhesions existed in various parts of the pelvis. In reference to the point raised by some speakers as to whether the position of the London Hospital had anything to do with the large number of cases of diseased tubes found, owing to the prevalence of gonorrhœa in the East End, he did not think that as a fact gonorrhœa was more prevalent in the East than elsewhere in London; certainly among his out-patients at the London Hospital severe forms of vaginitis were not more common than he remembered them to have been at University College Hospital. Moreover, many of these cases in the London Hospital were sent in from the adjoining country districts. As regarded the possibility of removal of the tubes there was only one case (Case 2) where he thought it would have been impossible to remove them. Perhaps Mr. Lawson Tait did not catch the description of the specimen, or he thought he would agree that it could not have been removed. Possibly, however, at some earlier period of the patient's life the diseased tubes were not so densely adherent to surrounding parts as they afterwards became. As regarded the important point raised by Dr. Matthews Duncan as to how far the disease of the tubes had passed into a harmless stage, he thought in Case 11 one might be fairly sure it had done so. As regarded the others it was thought that, in Case 2 probably, and in Case 5 certainly, death resulted from disease of the tube. This gives a percentage mortality of 11·8 for cases of diseased tubes left to themselves, and for cases of pyosalpinx 40 per cent. As regarded the others it seemed to him a fairly probable view that the condition constituted a standing danger to the patient that might at any time have taken on an acute and fatal course. In Case 2, for instance, it would be admitted that the pyosalpinx present was a condition threatening, or that might at any time have threatened the patient's life. She died of pericarditis and pleurisy, having been subjected to the special antecedents, whatever these might be, that produce pericarditis and pleurisy running a fatal course. Had she, instead, been subjected to the special and as yet unknown conditions that cause rupture of the

tube she would certainly have died of acute general peritonitis. Whether hydrosalpinx and pyosalpinx are merely different stages of the same disease or not is at present undecided. Facts tending to show that they are the same disease in different stages are:—1st (as in Case 9), the presence of pyosalpinx on one side and hydrosalpinx on the other. Granting, as is almost certain, that the disease of the tubes has spread from inflammation of the interior of the uterus, it was difficult to explain the existence of pyosalpinx on one side and hydrosalpinx on the other except on the assumption that these conditions are the same disease in different stages. 2nd, regarding the contents of the dilated tubes, stages intermediate between clear watery fluid and pus are met with; for instance, Case 4, contents "turbid fluid not purulent;" and again, Case 10, contents "milky fluid." If further investigation should establish the view that a hydrosalpinx may at any time become a pyosalpinx under suitable conditions, and that cases of pyosalpinx have a mortality, when left to themselves, of 40 per cent., as in his series, we should not be able to resist the conclusion that dilated tubes should be removed.

JUNE 1st, 1887.

JOHN WILLIAMS, M.D., President, in the Chair.

Present—41 Fellows and 4 Visitors.

Books were presented by Sir Henry W. Acland, K.C.B., and Mr. R. W. Parker.

G. Mallack Bluett, L.R.C.P.Lond., and George W. Moseley, M.B., C.M.Ed., were admitted Fellows of the Society.

James C. Cameron, M.D. (Montreal), and John Talfourd Jones, M.D. (Eastbourne), were declared admitted.

The following gentlemen were proposed for election:—Robert Ambrose, B.A., L.R.C.P. & S.Ed.; Henry Spelman Baumgartner, M.B.Dur. (Newcastle-on-Tyne); Murdoch Cameron, M.D.Glas. (Glasgow); William Growse, L.R.C.P. Lond. (Brentwood); John Hackney, M.D.St.And. (Hythe); Henry Algernon Hodson, L.R.C.P., L.M.Ed. (Brighton); Octavius E. B. Marsh, L.R.C.P.Ed. (Newport, Mon.); Thomas Berkeley Martin, L.R.C.P. & S., L.M.Ed. (Sunderland); John Shaw, M.D.Lond.; Thomas Tinley, M.D. Dur. (Whitby); Ernest Aston Otho Travers, L.R.C.P. Lond. (Malay Peninsula); and John Adam Watson, L.R.C.P. & S.Ed.

RETROFLEXION OF AN EARLY HUMAN EMBRYO ASSOCIATED WITH ABSENCE OF THE SPINAL MEDULLA AND IMPERFECTION OF THE VERTEBRAL COLUMN.

By C. B. Lockwood, F.R.C.S.,
SURGEON TO THE GREAT NORTHERN CENTRAL HOSPITAL, ETC.

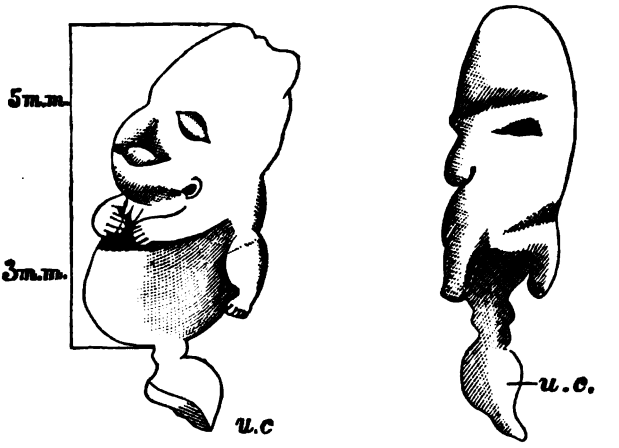
The embryo which I am about to describe was sent to me by my friend, Dr. G. F. Barnes, who says there is every reason to believe that it came of healthy parents. The mother was twenty-eight years old and had had a previous pregnancy which ended in abortion. It is always hard to ascertain the age of human embryos, and in this case the deformity which existed made the task more difficult. However, the probabilities are that it had reached about the fiftieth day of intra-uterine life. Measured from the crown of the head to the hindermost part of the body, which was the protuberance of the belly, the specimen measured 8 mm., but the head alone was 5 mm. long. As may be seen from the accompanying sketches (Figs. 1 and 2), which I made before the sections were cut, the head is large and the tongue protrudes from the mouth, and these peculiarities, combined with a short and thick neck, give the embryo a decided likeness to a cretin. The arms look natural, but the legs, although apparently the right size for such an embryo, seem to grow from the back and protrude sideways instead of forwards. There is nothing to indicate the sex of the embryo.

After having been hardened in absolute alcohol and stained in picro-carmine, the embryo was embedded by the ordinary wax process and cut into 354 transverse sections,* which were mounted in consecutive order. It is obvious that it would be an impossible task to describe

* These specimens are in the museum of St. Bartholomew's Hospital, where anyone can see them.

more than a few of these, and therefore it is proposed to figure and describe sections from the following levels, namely, the eyes, lower jaw, chest, abdomen, and pelvis. Mr. Bousfield very kindly made a number of photographs of the various sections which have materially helped forward the work of description.

Fig. 1.—Front view. Fig. 2.—Back view.



Sketch of Retroflexed Embryo (before cutting. Slightly magnified).
u.c. Umbilical cord.

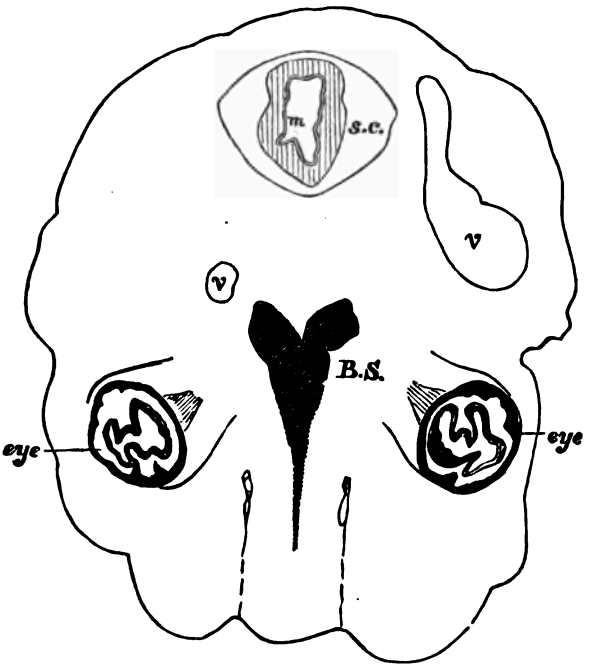
The various sections in front of the eyes show that there is a brain, but they are not good enough to permit of definite statements concerning its structure or degree of development.

Sections through the eyes (Fig. 3) show that those organs possess a well-developed choroid and retina, and that the sclerotic and its immediate surroundings have begun to appear. Near the middle line a part of the cartilaginous base of the skull and the ethmo-vomerine plate have been divided, and some distance further back is the vertebral canal and in it the upper part of the spinal medulla. The latter has a capacious central canal, but I am unable to say that it differs in any important particular from that of other human embryos of about the

same age. The cartilaginous surroundings of the spinal medulla are absent, and there is a large blood-vessel (*v*, Fig. 3) towards its right side (spectator's right).

Continuing to follow the sections in sequence towards the base of the skull the spinal medulla gradually dwindles

FIG. 3.

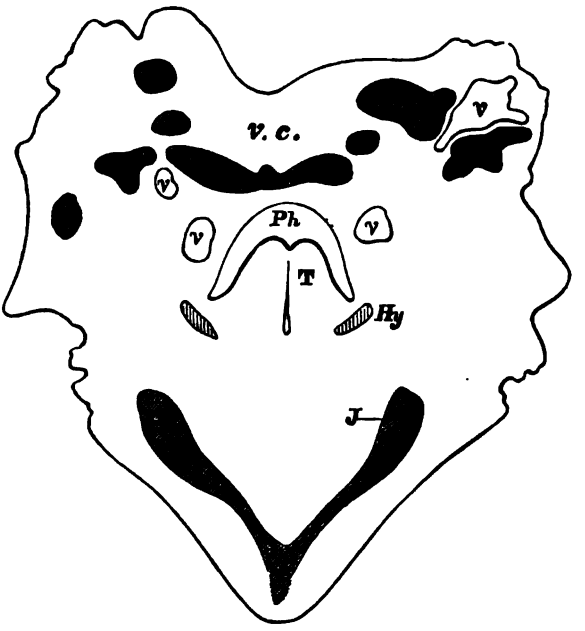


m. Spinal medulla. *s.c.* Spinal canal. *v.* Vein. *B.S.* Base of skull.

and ends opposite the cartilaginous bodies of the upper cervical vertebræ. The spinal canal likewise diminishes and its place is taken by a quantity of loose embryonic connective tissue. In the cervical region the cartilaginous bodies of the vertebræ surround a notochord and seem fairly normal but they have no neural arches or spines.

The section through the lower jaw (Fig. 4) proves that the cartilaginous precursor of that member and the contiguous structures are properly developed and that the tongue is, although large, normal. The same may be said of the hyoid bone, or rather of its cartilage. The interest of this particular specimen centres in the spinal region,

FIG. 4.

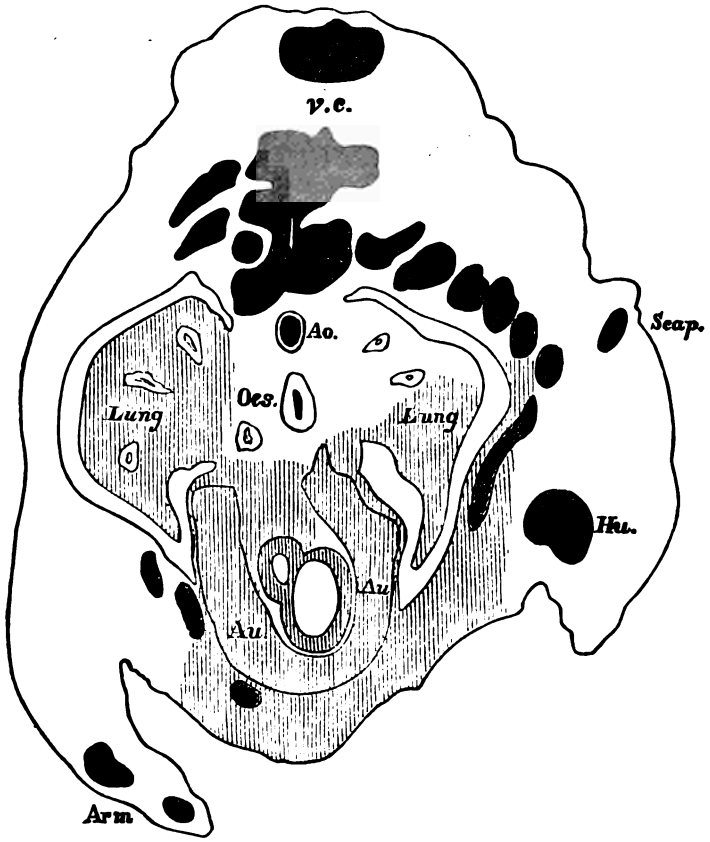


Section immediately beyond termination of spinal medulla. All the parts shaded in this figure are cartilage.
v. Blood-vessels. *Ph.* Pharynx. *T.* Tongue. *Hy.* Hyoid bone. *J.* Jaw.

where there is no trace of spinal cord, and only a little connective tissue in its place, with skin for its dorsal covering. The cartilaginous vertebral column has no neural arches and the bodies of the vertebræ are double, that is to say, they consist of two cartilaginous masses placed side by side as in cases of fissure of the spine.

This circumstance is not well shown in the section which has been figured (Fig. 4), but is quite unmistakeable in these a little further on. The most curious circumstance

Fig. 5.

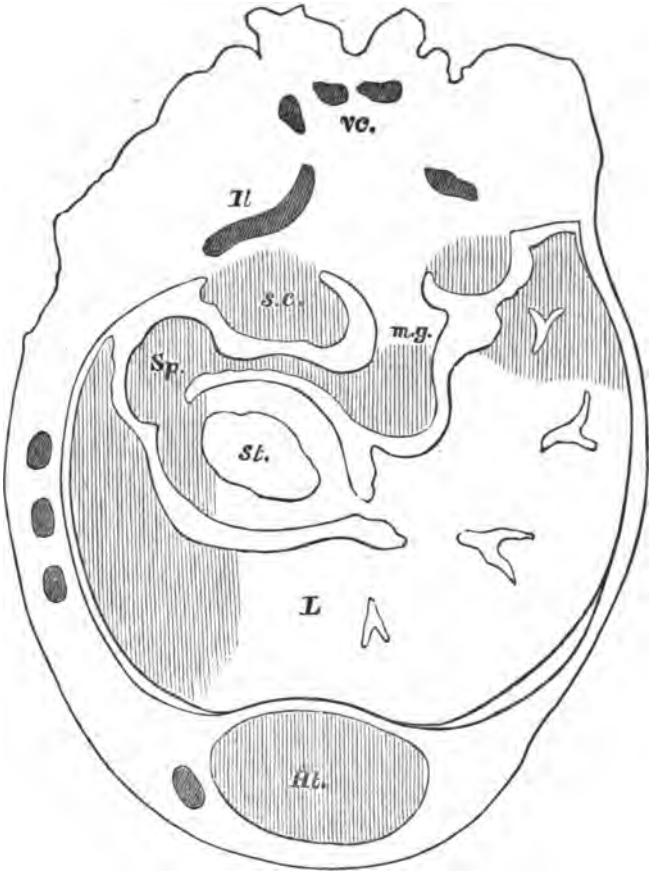


All the dark shading in this figure is cartilage.
v.c. Vertebral column. *Ao.* Aorta. *Oes.* Œsophagus. *Au.* Auricle. *Scap.* Scapula. *Hu.* Humerus.

connected with this condition is that in some of the sections each portion of the bodies contains a notochord near its centre. This is best seen in the lower cervical region, opposite the larynx.

The sections (Fig. 5) through the upper thoracic region and fore limb seem to show that, so far as can be judged by comparison with embryos of the same size, the heart,

FIG. 6.



v.c. Vertebral column. *Il.* Ilium. *s.c.* Supra-renal capsule. *m.g.* Mesogastrium. *Sp.* Spleen. *St.* Stomach. *Ht.* Heart. *L.* Liver.

pericardium, lungs, and great vessels are properly developed and also the shoulder-girdle. However, the figure

(Fig. 5) shows that the spinal medulla is absent here as elsewhere, and that, although the vertebral bodies are uncleft, yet they are irregular in shape and flexed acutely forwards and to the right side (spectator's right). The rudiments of the ribs are properly developed and call for no further mention.

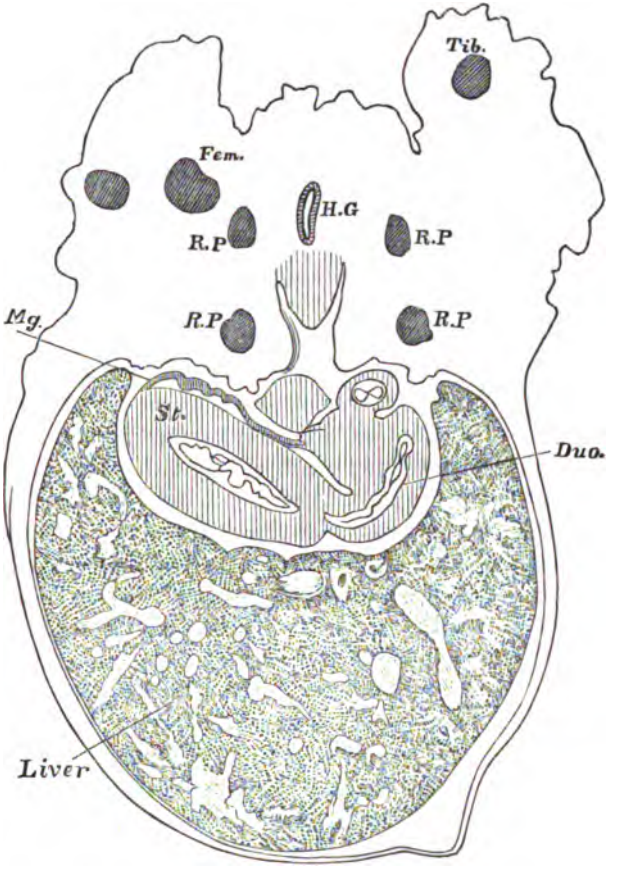
A section through the abdomen just above the origin of the hind limbs demonstrates that the abdominal, like the thoracic, viscera are properly developed. It may be noticed that besides the mesogastrium, stomach, gastro-hepatic ligament, and liver, the apex of the heart is contained in the section (Fig. 6), but this is not particularly noticeable because in early embryos the apex of the heart is much lower than at later dates. Towards the dorsum of the embryo the termination of the spine is represented by small nodules of cartilage, whilst ventral to this and on either side the ilia are divided.

The remaining section (Fig. 7) justifies the application of the term "retroflexion" to this embryo. The ventral part of the specimen calls for no remark, but the dorsal portion consists of the pelvis and legs. So far as their growth and development is concerned those parts seem normal, but obviously their positions are as nearly as possible reversed. This particular section is through the arch of the pubes, whose two rami are divided on each side. Between the rami is the cloaca; the pubes and legs therefore are directed dorsalwards.

This comprises a brief account of this embryo on different levels. What they have shown may be summarized as follows: (*a*) That the thoracic and abdominal viscera, including the suprarenals and kidneys, are present and apparently well-grown and developed. (*b*) That there is no spinal medulla. (*c*) That the spinal column is excessively short, has no neural arches or spines, and that the bodies of the vertebræ are uncleft in the upper cervical region, cleft in the lower cervical, irregular in upper dorsal, and absent in lower dorsal and lumbar. (*d*) That there is a notochord which is single in the upper cervical

region, double in lower cervical, and single again in the dorsal region. (e) That the spine has a slight lateral and an acute antero-flexion in the upper dorsal region.

FIG. 7



Section through pelvis.

Nothing could be ascertained concerning the genital organs or about the peripheral nervous system.

The cause of the retroflexion of this embryo seems to be as follows:—The spinal column has failed to develop

whilst the viscera at its ventral surface have both developed and grown and forced the pelvis and lower spine dorsalwards. In searching for a reason to account for the ill-development of the spine it is impossible to ignore the remarkable absence of the spinal medulla. Perhaps it is not wrong to assume that in a degree the spinal column is but an appendage to its contents and that it is called into existence by their presence. If this proposition is true its converse will hold good, and we might anticipate that when the spinal medulla was absent the column would be deficient. The sequence of development lends force to this line of argument, for the cartilaginous spine is not laid down until after the medulla is established. However, it is harder to find any plausible argument to account for the deficiency of the nervous structure. The sections show that the blood supply is not at fault, nor need we think that that might have been the case, for, as is well known, the nervous tissues have no small degree of development before the heart or vessels contain any blood. In my opinion the original epiblast from which the medulla is developed must have been at fault. The extraordinary doubling of the notochord in the lower cervical region points to a very early departure from the normal. As far as I am able to ascertain there is hardly any scientific evidence of the causation of such early faults in mammalian ova. For three years I have been engaged in breeding rabbits for the purpose of obtaining early embryos. A great many curious circumstances have come to light, and in one case the development of an embryo was in my opinion retarded by its having been caught in an irregularity in the uterine wall. I am convinced that a systematic study of the amount of development of the various members of litters of rabbits' embryos of the eighth and ninth day would yield valuable results and show that many ova reached a certain stage of development and then aborted.

In conclusion, I would remark that the peculiarities of the embryo are of additional interest taken in connection

with that which Dr. Matthews Duncan and Dr. Hurry have so ably written in the twenty-sixth volume of these 'Transactions' upon retroflexions of the fœtus. Although their paper is exhaustive they mention no case like that which has been described, and which seems, as far as can be ascertained, quite unique.

MICROSCOPICAL SECTIONS OF TUMOURS OF FŒTAL MEMBRANES.

By G. Mallack Bluett and G. E. Herman, M.B.

Dr. Herman showed microscopical sections from the tumours exhibited by Mr. Bluett.

The smaller of the tumours was found on section to contain calcareous nodules. To obtain fine sections a slice of it had to be de-calcified. Sections made through it after this had been done showed masses of cartilage, in places becoming calcified, but not exhibiting true ossification. There were also small masses of imperfectly formed bone, and bundles of tissue in every way resembling voluntary muscle except as to striation. The non-visibility of striation might be due to imperfection in the mode of preparation of the specimen.

Dr. Herman could only conclude that this tumour was an abortive, imperfectly developed embryo; and from its formlessness (for the bone, cartilage, &c., in the section was not arranged in any such way that the figure of a fœtus or part of a fœtus could be traced) the idea was suggested whether it could be a kind of abortive fœtus acardiacus.

The larger of the two tumours was softer than the other, and contained no gritty nodules. On its inner aspect the amnion was seen distinct and in places separate from the tumour. Outside this was a layer of tissue showing slight fibrillation, with nuclei, and this Dr.

Herman took to be the fibro-nuclear layer of the chorion. Outside this was the tumour proper. This consisted of imperfectly formed fibrous tissue, forming a meshwork with rounded or ovoid interspaces of varying size. Some of these interspaces were filled with myxomatous tissue; others with an interlacement of fine thready tissue, something like that seen in the placenta. Dr. Herman regarded this tumour as probably formed by degeneration of the placenta, and possibly of the cord also, belonging to the fœtus of which the other tumour was the remainder.

SPONTANEOUS GANGRENE OF UPPER PART OF VAGINA, WITH VAGINAL PORTION OF CERVIX UTERI AND BASE OF BLADDER.

By G. E. Herman, M.B.

Dr. Herman exhibited this specimen. It was from a patient to whom he had been called on May 6th. She had then been ill for about three weeks, under the care of Dr. Cotman and Mr. Farebrother, of the Minories, in consultation with whom Dr. Herman saw her. The illness commenced with acute febrile symptoms—high temperature, quick pulse, &c. After the first few days diarrhœa and delirium became added to these symptoms. The loose motions at first resembled in appearance those of enteric fever, but about May 2nd it was noticed that the stools were exceedingly offensive and bloody. This continued, and on May 4th Mr. Farebrother was sent for to the patient, and found a putrid mass hanging by a small pedicle out of the vagina. He cut through the pedicle and removed the mass. After this the patient's general condition much improved. On May 6th there was a copious vaginal hæmorrhage which led to Dr. Herman being sent for. It had ceased

when Dr. Herman arrived. He found the patient apparently doing well; no febrile symptoms, no hæmorrhage, slight and not offensive vaginal discharge. The upper part of the vagina felt as a cavity lined with soft granulations, in the middle of which the stump of the cervix contrasted by its hardness with the surrounding tissues. A few days after this the urine began to continually run away, and at the end of May the patient was admitted into the London Hospital. The vagina was now (June 1st) much contracted at its upper part, where it ended in an opening not large enough to admit the finger, and this opening led into the bladder.

The putrid mass, removed by Mr. Farebrother, and now exhibited, consisted of a slough in one mass of the upper two inches of the vagina and the lower two thirds of an inch of the cervix uteri.

The patient's last child was born eight years previously. Until the illness described the patient had thought herself in good health. She had had a vaginal discharge for about two months before this illness, but this was quite slight in amount and ordinary in character, so that the patient did not mention it until questioned as to discharge, and thought very little of it. It was not accompanied by any pain, soreness, or discomfort. There were no signs of disease in any other part of the body. Her husband denied that he had suffered from any venereal disease or from disease of any kind connected with his generative organs.

CASE OF HYDATIDS OF THE MESENTERY.

By Edward Malins, M.D.

J. B—, aged 40, married twice, one child, two miscarriages, last pregnancy ten years ago. Admitted to the Hammerwich Cottage Hospital under the care of Dr.

Maddever at the beginning of April, 1887, with the following history:—States that she has always had good health up to eighteen months ago, when she noticed some fulness on the left side of the abdomen. It was not painful but gradually got larger, causing a feeling of distension and weight. Her general health has not been impaired; has not got thinner. Menstruation has been regular as to time and quantity; there is no family history of any tendency to special disease.

Examination.—Aspect good; well nourished. On the left side of the abdomen there is a rounded swelling, the centre of which is about the junction of a perpendicular line drawn from the ninth costal cartilage, and a transverse one across the iliac crests. Over an area of about three inches there is dulness on percussion, a sensation of fluid, and marked fremitus; all around there is resonance. The uterus is mobile; a sound passes two and a half inches; there is nothing abnormal to be felt in the pelvis. The urine, taken with a catheter, is free from albumen.

Operation (April 25th).—An incision two and a half inches long was made in the middle line, the parts dissected down to a cyst, about a line thick, and firm in consistence. This was punctured with a trocar and exit given to a few ounces of clear transparent fluid; pressed deeper more fluid escaped. The cyst was found to be unattached except at its base, which dipped deeply down to the left of the spine apparently arising from the mesentery. On enlarging the opening into it, and fixing the edges all around with catch forceps, a number of thin-walled cysts of various sizes were extruded; the majority of these, some sixty to seventy in number, were about the size and shape of ordinary hen's eggs filled with clear fluid (such as these shown); about 30 oz. of clear fluid also escaped. The edges of the cyst were carefully stitched to the incision, and the parent cyst washed out with a saturated solution of boracic acid in warm water, a glass drainage-tube being placed in the most dependent part.

The patient has since done well; the cyst has evidently contracted; at the end of a fortnight the glass tube was replaced by a piece of india-rubber drainage-tube giving exit to a few drops of pus only.

It is known that hydatids may be found in nearly all parts of the body; the ovary is an exception, and I have not found recorded an instance of a large cyst like this having its basis in the mesentery.

A FIBROID TUMOUR OF THE OVARY WITH A PAPILLIFEROUS CYST.

By John Williams, M.D.

The President showed a tumour of the ovary, which consisted of two parts, a lower solid and upper cystic. The whole growth weighed 7 lbs. 7 oz. The lower solid portion is of a spheroidal shape flattened antero-posteriorly. It is covered by a smooth, mottled membrane through which can be seen distended vessels, and which is raised up in several places into small distended bullæ. These contain a dark, grumous fluid, and the substance of the tumour is softer under them than elsewhere. At the lower part of the tumour near the pedicle is a small growth the size of a small hen's egg which on section appears to consist of firm fibrous tissue. On section the tumour is seen to be composed of reddish-grey tough fibrous tissue. In its centre are numerous spaces having a smooth surface, and filled with bloody fluid.

Attached to the upper and posterior surface of this solid tumour by a broad base is a large collapsed cyst with thin tough walls, but close to the pedicle they become thicker. The inner surface of the cyst is for the greater part of its extent smooth and glistening, but near the thickened portion of the wall it is studded by reddish

papillomatous growths varying in size from a pin's head to a hazel nut. In the largest of these there is a cyst about the size of a pea. The pedicle, which is twisted and about the thickness of a fat forefinger, contains extravasated blood and large veins filled with coagulum.

FIBRO-CYST OF OVARY.

By W. A. Meredith, M.B., C.M.

Mr. Meredith exhibited a specimen of fibro-cyst of the left ovary, successfully removed from a married woman, forty-five years of age, in July, 1886. A narrow pedicle, secured at the operation by transfixion with silk ligatures, connected the growth with the left side of a normal uterus. The right ovary and tube were healthy. No trace of a left ovary was discoverable after removal of the tumour. The fluid contained in the cystic portion of the growth, amounting to several pints, consisted of bloody serum.

In reply to Dr. Gervis, Mr. Meredith stated that the pedicle resembled an ordinary ovarian tumour in structure.

Mr. Doran asked if Dr. Williams's and Mr. Meredith's specimens had been examined microscopically. Many "fibromata" of the ovary were really fibro-myomata. The tissues of the uterus and ovary were continuous through the ovarian ligament, itself a band of plain muscular fibre. He had demonstrated this fact in a paper read before the Pathological Society of London during the past winter.

TUMOUR SHOWING THAT IT IS, IN SOME CASES, IMPOSSIBLE TO MAKE A DIFFERENTIAL DIAGNOSIS BETWEEN UTERINE AND OVARIAN NEOPLASMS.

By JOHN D. MALCOLM, M.B., F.R.C.S., Edin.

MR. MALCOLM showed a tumour for Mr. Knowsley Thornton. It had been removed from an unmarried lady, aged 31, and there was no history except of slightly painful and rather scanty menstruation for a few months before the tumour had been discovered. The point of interest was the impossibility of saying definitely before operation whether the tumour was uterine or ovarian. Under the circumstances Mr. Thornton advised operation, and the specimen showed that the tumour was closely connected with the inner end of the ovary. There had also been a small, very vascular attachment to the side of the uterus, so that it remained doubtful whether the tumour should be considered ovarian or uterine. The patient had made an excellent recovery.

SOLID PELVIC TUMOUR.

By W. A. MEREDITH, M.B., C.M.

MR. MEREDITH also showed a specimen of solid tumour, two pounds in weight, which he had recently removed from a single lady, 47 years of age. The growth was completely encapsuled in the left broad ligament, whence it was enucleated. An extremely short, but well-defined pedicle connected it with the left cornu of a small and

perfectly normal uterus. The right ovary and tube were healthy; but no trace of a left ovary was discoverable in the pelvis after removal of the growth, which was therefore considered as possibly ovarian in origin.

A Sub-Committee was appointed to examine and report upon the following specimens just exhibited:

(1) Tumour of Fœtal Membranes, Mr. Bluett and Dr. Herman.

(2) Fibroid of Ovary, the President.

(3) Fibro-cyst of Ovary, Mr. Meredith.

(4) Fibroid of Ovary, Mr. Malcolm.

(5) Solid Pelvic Tumour, Mr. Meredith.

The Committee to consist of Drs. Galabin and Herman, and Mr. Doran.

SLOUGHING UTERINE FIBROID.

By W. A. Duncan, M.D.

The Humble Address of the Fellows of the Obstetrical Society of London.

To Her Most Gracious Majesty Queen Victoria, Queen of Great Britain and Ireland.

May it please Your Majesty,

We the President, Council, and Fellows of the Obstetrical Society of London, humbly beg to offer to your Majesty our grateful and dutiful homage on the occasion of the happy completion of the fiftieth year of

your Majesty's reign ; a reign which, marked as it has been by innumerable benefits conferred on every class of your Majesty's subjects, will ever be specially remembered by the medical profession on account of the wise and discerning personal interest which it has pleased your Majesty to take in the matters which are our daily concern. While this is true of our profession as a whole, it is true above all with regard to that department of the profession with which we are particularly connected, and which takes under its more immediate care the welfare of mothers and infants, a class of your Majesty's subjects who have been honoured by innumerable acts of thoughtful and tender consideration throughout your Majesty's reign. Our prayer is that your Majesty may long be spared to continue to your faithful subjects the blessings which we so highly prize.

We have the honour to be

Your Majesty's dutiful and loyal subjects

(Signed) JOHN WILLIAMS, *President.*

F. H. CHAMPNEYS, } *Hon. Secs.*
PERCY BOULTON, }

A CASE OF CÆSARIAN SECTION.

By CHARLES J. CULLINGWORTH, M.D., F.R.C.P.,

PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY AT THE OWENS COLLEGE, MANCHESTER; PHYSICIAN TO ST. MARY'S HOSPITAL FOR WOMEN, MANCHESTER.

(Received January 18th, 1887.)

(*Abstract.*)

A RACHITIC dwarf, aged 30, four feet two inches in height, was sent at full time to the author. The pelvis was generally contracted and flat, the estimated conjugata vera being two and a quarter inches. The child was alive. There was great albuminuria, with œdema of the abdominal wall, labia, and legs. Labour began spontaneously, and when the os uteri was as large as a florin Cæsarian section was performed with full antiseptic precautions. The child weighed 5 lbs. 9 oz., and was extracted by one leg; it was partially asphyxiated but soon recovered. After clearing the uterus of the placenta and membranes, its lower segment was constricted by an elastic ligature. The loss of blood was trifling. The uterine wall was united by four deep silk sutures, and the peritoneal edges by six finer superficial silk sutures.

The patient died twenty-nine hours after operation, the temperature remaining under 100° F. until two or three hours before death, when it rose to 100·8° F., pulse 140.

Post mortem there was no sufficient cause of death found except acute parenchymatous nephritis.

A tracing of the pelvic brim accompanies the abstract.

On November 23rd, 1886, there was admitted into the lying-in ward of St. Mary's Hospital, Manchester, from a neighbouring workhouse, an unmarried woman of 30, a

rachitic dwarf, with deformed pelvis, at or very near the full term of her first pregnancy.

She stated that she was unusually small at birth, and could not walk until she was five years old. Her father's appearance presents nothing remarkable. Her mother, who is dead, was a dwarf, and her only surviving brother is said to be not more than four feet in height. Her own height is four feet two inches.* She is of weak intellect, being stupid, suspicious, and intractable.

The last menstruation was in the middle of February. The abdomen began to enlarge a few months later. For about a week past there had been noticed swelling of the legs and of the labia.

The abdomen is very prominent. The fundus uteri reaches to the ensiform cartilage. The fœtus occupies the long axis of the uterus; the head can be felt above the pubes, the limbs to the right. The fœtal heart-sounds (130 per minute) are heard most distinctly at a point two inches to the left of the umbilicus, and half an inch above it. The uterine souffle is loudest at a point one inch to the left of the umbilicus, and two inches above it. It seems probable from this and the result of palpation that the placenta is situated high up on the anterior wall, and slightly to the left side. There is great œdema of the abdominal walls, labia, and lower extremities, none of the face or upper extremities. The vaginal orifice is small; the os uteri high up and slightly patulous. The following are the pelvic measurements: Conj. ext., $5\frac{7}{8}$ inches; Dist. sp. il., $9\frac{1}{2}$ in.; Dist. cr. il., $9\frac{1}{2}$ in.; Conj. diag. $2\frac{3}{8}$ in.

The urine is highly albuminous, its sp. gr. 1010. Regular uterine contractions commenced at 5 a.m. on the day following that of the patient's admission. At 9 a.m.

* The length of the lower extremity, measured from the anterior superior spinous process of each ilium to the sole of the foot, is twenty-five inches; the length of the upper extremity, measured from the tip of each acromion to the styloid process of the radius, is seventeen inches. The chest is very narrow and the sternum prominent. There is forward curvature of the lumbar spine, and the tibiæ are curved forwards and outwards.

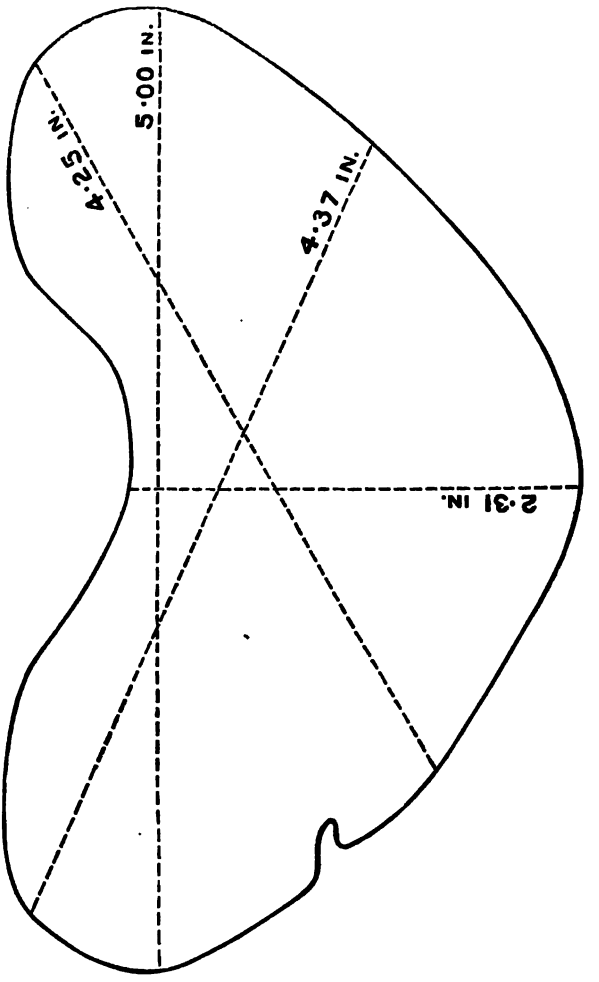
the liquor amnii was found to be dribbling away; at 10.30 the os uteri was dilated to the size of a florin, and the head was presenting.

A consultation of the staff was now held, and it was decided to perform the Cæsarian section. Accordingly, at 11.30, the patient was placed on the operating table in the ovariotomy ward, and chloroform administered.* My senior colleague, Dr. Lloyd Roberts, very kindly assisted me in the operation, while my junior colleague, Dr. Walter, undertook to receive and take charge of the child. The operation was performed under the spray of carbolic acid, a solution of carbolic acid was used for purifying the instruments and sponges, and a solution of corrosive sublimate (1 part in 1000) for the hands.

The patient being fully anæsthetised, an incision was made in the situation of the linea alba, between the umbilicus and pubes, down to the peritoneum, which was pinched up with forceps, and divided to an extent corresponding with that of the external wound. A considerable quantity of ascitic fluid thereupon made its escape. The abdominal wound was now continued upwards until it had a total length of seven inches. The body of the uterus was then pressed out of the abdominal cavity and held steadily, while an incision two inches long was made in the middle line, extending through the whole thickness of the uterine wall. This incision exposed the lower portion of the placenta above, and the membranes below. The membranes were punctured, allowing a small quantity of liquor amnii to escape, and the uterine incision was extended downwards until it had a total length of a little more than four inches. Each angle of the uterine incision was now hooked up by the finger of an assistant, while I passed my hand into the uterus, and proceeded to seize a leg and extract the child. One gush of blood took place, and then the uterus contracted. The withdrawal of the head presented very little difficulty. After the lapse of a

* It happened that I had arranged to perform an ovariotomy at this hour, so that everything was in readiness for an operation.

moment or two, when the pulsation in the cord had nearly ceased, a ligature was applied, and the cord divided. The child, which was partially asphyxiated, was then handed



Outline of pelvic brim (natural size), showing the various diameters and the position of the bony projection on the right side.

over to Dr. Walter, who applied himself diligently and successfully to its resuscitation. Meanwhile, the placenta and membranes were separated and removed, and a finger

was passed down through the os uteri to make sure of a free outlet for the lochia. A piece of stout elastic tubing was then wound twice around the lower end of the uterus and firmly tied, to prevent hæmorrhage. The wound was closed by means of four deep sutures of carbolized silk, passed from within outwards, the needle entering the substance of the uterine wall at a depth of about three quarters of its thickness, and emerging on the peritoneal surface at a distance of about one third of an inch from the edge of the wound. These having been tied, six superficial sutures, also of carbolized silk, but finer, were used to bring the edges of the peritoneum into accurate apposition. The abdominal cavity was now sponged out, and the external incision closed by deep sutures of carbolised silk and superficial ones of silkworm gut. A pad of lint steeped in carbolised glycerine was placed over the wound, and covered by a thick layer of cotton-wool, the whole being retained in position by a many-tailed abdominal bandage of flannel.

The operation, including the administration of the anæsthetic, occupied forty minutes. The whole quantity of blood lost did not exceed half a teacupful.

The child, a small but well-formed boy, weighed 5 lbs. 9 oz. The weight of the placenta was 12½ oz.

At four o'clock in the afternoon, as the patient complained of a good deal of pain, a quarter of a grain of morphia was administered subcutaneously. This was repeated at 9.45 p.m., and again at 7.45 the following morning. No vomiting occurred until half-past six on the morning after the operation. A second attack took place at a quarter past eight. At 10 a.m., the patient sank into a half-conscious condition from which she never rallied. As will be seen from the following record, the pulse became very rapid in the afternoon, and the temperature rose slightly. Death took place at 5 p.m. November 25th, twenty-nine hours after the operation.

The record of pulse and temperature was as follows :—

1886.	Nov. 24.—2 p.m.,	pulse	96,	temp.	98·8° F.
	6 p.m.,	,,	110,	,,	99·2° F.
	10 p.m.,	,,	98,	,,	98·6° F.
	,, 25.—2 a.m.,	,,	102,	,,	99·6° F.
	6 a.m.,	,,	100,	,,	99·4° F.
	10 a.m.,	,,	126,	,,	99·6° F.
	2 p.m.,	,,	140,	,,	100·8° F.

Extract from Report of the Post-mortem Examination.—Made by Dr. Thomas Harris, Pathological Registrar and Demonstrator at the Manchester Royal Infirmary, twenty-four hours after death.

Rigor mortis present in upper and lower extremities; no signs of post-mortem decomposition. Marked anasarca of lower extremities and labia, and excoriation of the latter; no œdema of hands or any part of upper extremity.

Abdominal incision 7 in. long in median line, united by sutures. A pint of slightly blood-stained serum in peritoneal cavity; no clots; no hyperæmia of either visceral or parietal layer of peritoneum, except at edges of uterine wound, where there is slightly increased vascularity, but no extreme congestion. Uterine incision 4 in. long in median line, united by sutures; edges of wound in perfect apposition; no exudation of lymph on adjoining peritoneum; no peritonitic adhesions anywhere about the uterus.

Length of uterus, measured externally before being laid open, 8 in.; breadth at fundus $4\frac{3}{4}$ in. Length of cervix, measured internally, $3\frac{1}{2}$ in; of body, $4\frac{1}{2}$ in. Breadth of cavity, $3\frac{1}{4}$ in. Thickness of wall at fundus, $\frac{7}{8}$ in.; at junction of upper and middle thirds of body, $1\frac{1}{8}$ in.

Inner surface of uterus very shreddy, and studded with a number of fine black points, between which the colour is pale red; no clots or remains of placenta in cavity; sutures uniting wound in no case extend to inner surface of uterus, the deepest being fully $\frac{1}{4}$ in. from it.

Ovaries perfectly healthy.

Lungs, liver, and stomach healthy; kidneys removed for more detailed examination.

Marked forward curvature of lumbar portion of spine. Sharp, bony outgrowth on ilio-pectineal line, $2\frac{1}{2}$ in. to right of pubic symphysis, projecting into pelvis to the extent of $\frac{1}{8}$ in. Measurements of pelvic brim: conjugate, $2\frac{5}{16}$ in.; transverse, 5 in.; left oblique, $4\frac{1}{4}$ in.; right oblique, $4\frac{3}{8}$ in. Lower part of sacrum and coccyx sharply curved forwards; distance from upper border of first bone of sacrum to sacro-coccygeal joint, $3\frac{1}{8}$ in.; to tip of coccyx, $3\frac{1}{2}$ in.

On January 11th, 1887, Dr. Harris kindly furnished the following report on the condition of the kidneys:

"Both organs presented a similar appearance. They were not appreciably enlarged, but very pale, being of a greyish colour. The capsules separated readily, leaving a perfectly smooth surface. On section, the cortex was found to be of a pale grey colour, but not noticeably increased in thickness. The medullary part was somewhat paler than natural, but was otherwise normal in appearance.

"Microscopically, it was found that the epithelium of nearly all the tubules, but especially of the convoluted ones, was very granular, and the nuclei of the cells took the staining agents very imperfectly. The epithelial cells were very cloudy, and in many parts broken up into simple granular detritus. The glomeruli were very rich in nuclei, which took the staining exceedingly readily. The capsules of the glomeruli were normal in appearance. There was no interstitial change in the kidney.

"I am inclined to regard the condition as one of acute parenchymatous nephritis with some glomerular nephritis."

The conjugate diameter of the pelvic brim in this case was estimated to measure a little over $2\frac{1}{4}$ in.; it was therefore somewhat difficult to decide whether to deliver by embryotomy or Cæsarian section. My colleagues and myself considered, however, that with an antero-posterior contraction of this extent, and a pelvis generally contracted in all its diameters as well as flattened, the opera-

tion of embryotomy would necessarily be difficult and prolonged, and would probably involve as great a risk to the life of the mother as the Cæsarian operation, provided the latter were performed antiseptically and before the uterus was exhausted. Taking into account, therefore, the fact that the child was alive, and the further fact that, labour having only just commenced, I was free to select the most favourable moment for operating, I decided in favour of Cæsarian section. In this decision both my colleagues concurred. Indeed, we were all of opinion that, leaving the albuminuria out of the question, the case was an extremely favourable one for the operation. Had we known of the little bony spike which was discovered at the autopsy projecting inwards from the pelvic brim, we should have formed a still stronger opinion as to the risks of delivery *per vias naturales*.

The cause of the mother's death is less easy to determine in this case than in most of the fatal cases of Cæsarian section. Generally there is found evidence either of septicæmia, or of gaping of the uterine wound with escape of the discharges into the peritoneal cavity, or of extensive peritonitis, or of hæmorrhage. Dr. Harris's report shows that none of these conditions was present in this instance. It seems, therefore, not unreasonable to attribute the fatal result to the condition of the kidneys. The experience of all operating surgeons leads them to dread the result of any severe operation on a patient whose kidneys are in the slightest degree unsound. The supposition that the patient's death was due to a rapid form of septicæmia derives no support either from the symptoms during life or from the post-mortem appearances.

There are only one or two points that appear to call for remark with regard to the details of the operation. It will be observed that, in all essential particulars, it was carried out according to the method advocated, in his most recent utterances, by Sänger, to whose praiseworthy labours and persevering advocacy we owe the revival

under new and more favourable conditions, of the old operation of Cæsarian section. The uterus was brought outside the abdomen before it was opened; this manœuvre not only assists in preventing the discharges from passing into the peritoneal cavity, but greatly facilitates manipulation. The measures adopted to control hæmorrhage comprised:—(1) the commencing with a short and deep uterine incision; (2) the speedy emptying of the uterus; and (3) the application, during the closing of the uterine wound, of the elastic ligature around the cervix. The quantity of blood lost was insignificant.

The sutures used to close the uterine wound were all of carbolised silk. The deep ones were passed through the outer three-fourths of the uterine wall, avoiding the decidual surface of the uterus. The peritoneal edges were not dissected up, but simply brought into very careful apposition, and united, after the deep sutures had been tied, by a series of finer superficial ones.

Dr. Horrocks thought that the most logical conclusion was that the patient had died from shock. The low temperature would go very well with that diagnosis. He asked whether the india-rubber band which was used to stop bleeding had been drawn so tight as to compress both arteries and veins, as would be necessary in order to efficiently control the hæmorrhage. And, if this had been done, might not the pinching of the plexuses of nerves which enter the uterus low down have increased the amount of shock?

Dr. John Phillips asked by what sign the position of the placenta had been diagnosed, and why it was necessary to bring the uterus outside the abdominal wound in order to extract the child, thus necessitating a larger incision and greater jeopardy to the mother's life.

Dr. Lewers thought that sufficient cause for delivering by the Cæsarian section had not been shown to exist in this case. The operation had admittedly been one of choice, not of necessity. It was true that great improvement in the results of Cæsarian section had been reported from Germany; so far, however, a like success had not been met with in this country, even in operations performed according to the most approved German methods. Until good results were obtained here in cases of Cæsarian section, performed as a matter of necessity, Dr. Lewers thought

we should abide by the old rule of delivering whenever it was possible *per vias naturales*. In the case under discussion, the degree of pelvic contraction was almost exactly similar to that in a case Dr. Lewers had himself met with. In this delivery was effected by craniotomy, and though the operation was tedious, particularly as it had to be performed on the aftercoming head, the patient recovered without a bad symptom.

Mr. MEREDITH inquired whether the possible advisability of performing Porro's operation in place of the Cæsarian section had been considered in this case. It seemed to him that the pelvic condition, as described, would have justified resort to the former method, were it only with a view to ensuring against the possibility of a future pregnancy in such a rachitic subject.

Dr. MATTHEWS DUNCAN had no right to speak as a man of much experience in Cæsarian section, and, unfortunately, perhaps, no one in this country had large experience. It was to Germany that we must look for the guidance of experience, to such wonderful successes as those of Sänger, and Leopold, and Credé, and Gusserow. It was such successes alone that should and would lead us in this great practical question, and they showed at present a less mortality with Cæsarian section than with Porro's operation. Both operations had a place in obstetric surgery, and he thought that Dr. Cullingworth had done rightly in selecting Cæsarian section in his case. In Wells's case, to which Mr. Meredith had alluded, with several large fibroids, he had wisely selected Porro's operation. No amount of eloquence about the abolition of craniotomy would help forward that much to be desired result, and there had been much of such talk. Nothing but success in some alternative operation, such as Cæsarian section, success like that of Sänger and Leopold, would be convincing eloquence or do the least good. This was true of other causes, as well as of the abolition of craniotomy. He (Dr. Matthews Duncan) approved of the course Dr. Cullingworth had followed in most particulars, and thought the renal disease was probably the chief cause of the death.

Dr. CHAMPNEYS wished to call attention to the statement in the paper that the placental site was diagnosed by the position of the uterine souffle. It was well known that the uterine souffle was to be heard after the delivery of the placenta, and, indeed, in cases where no placenta was ever present, such as fibroid tumours. In two cases of abdominal pregnancy recently observed, the position of the placenta was correctly diagnosed by palpation, the diagnosis being verified during abdominal section, but over the placenta in both cases there was absolute silence. It could not be too strongly urged that the uterine souffle was no guide whatever to the placental site. It had been said by former speakers that the pelvis did not justify the operation, and that there was no general contraction. He never saw a

more typical tracing of a generally contracted flat pelvis. As to the dimensions, it was true that with three inches in the transverse (measured not as in the diagram, but bisecting the conjugate) and two in the conjugate, delivery was possible, and he thought that four or five years ago Cæsarian section would not have been justified. But the recent statistics of Cæsarian section in Germany were so greatly improved, partly on account of improved methods of closing the wound, and principally on account of improved antiseptics, that Cæsarian section was probably safer for the mother than delivery *per vias naturales* in extreme cases such as this, and that in the present case Cæsarian section was the proper practice as an operation of election. Sänger's method essentially consisted of deep "musculo-muscular" sutures, not penetrating the decidua, and of superficial "sero-serous" sutures, bringing the peritoneal surfaces into apposition. This was its essence, and not the resection of a wedge-shaped piece of uterus which had been thought necessary for this object, but had been proved to be unnecessary. The late application of the elastic ligature was doubtless in the interests of the child, for if the ligature is closed long before the child is extracted, it dies of asphyxia, and the operation is so far a failure. He ventured to entirely differ from Mr. Meredith as to Porro's operation. This operation had had a fictitious success on account of the advances in antiseptic surgery, of which it took advantage, but compared with Cæsarian section with similar precautions its results were inferior, and it should not be preferred where the uterus was normal.

Dr. CULLINGWORTH, in reply, said he appreciated very highly the manner in which this communication has been received, and begged to thank the Fellows who had taken part in the discussion upon it for the kindly tone of their remarks. He was sorry not to be able to answer the question put by the President, as to the microscopic appearances of the urine, and the quantity passed after delivery; he had no note on either of these points. He quite agreed as to the superiority of corrosive sublimate over carbolic acid as an antiseptic, and relied upon it entirely for ensuring the cleanliness of his own hands; but he did not at present see his way to abandon the use of carbolic acid for the purpose of purifying the sponges and instruments, for which corrosive sublimate is unfitted. He thought if he were called upon to perform Cæsarian section again, he should avoid the use of the spray, because, although he had never yet seen serious harm result from its use in abdominal operations, and could not admit, with the President, that it might have been responsible for this woman's death, he thought it introduced a possible element of disturbance without constituting an essential part of the treatment. He agreed that the temperatures were rather in favour of uræmia than of septicæmia. He could assure Dr.

Horrocks that the elastic ligature was not applied either long enough or tightly enough to induce shock. With regard to the length of the external incision (the subject of inquiry from Dr. Phillips), it was only just sufficient to allow of the fundus uteri being pressed out of the abdomen. He was exceedingly glad to have the support of Dr. Matthews Duncan and Dr. Champneys in reference to the choice of the operation of Cæsarian section rather than that of embryotomy. It was a case in which the responsibility of decision was very great. He took full time to consider the matter, and deliberately chose the operation that appeared to him safest for the mother. With a pelvis so distorted, the operation of craniotomy or cephalotripsy would have been long and difficult, and his experience of these operations under similar circumstances had not been favourable. There was necessarily much bruising, and if recovery took place it was generally only after a dangerous illness. In this case the great œdema of the vulva would have rendered any operation *per vaginam* exceptionally difficult. He was, fortunately for his own peace of mind, not of opinion that a quarter of a grain of morphia was a dangerous initial dose, and that the patient probably died of morphia poisoning. This poor woman was, like many half-witted people, intolerant of the slightest pain, and without a particle of self-control; it seemed desirable, therefore, in order to prevent her disturbing the wound by her restlessness, to keep her as far as possible free from pain, even by the use of narcotics, if necessary. He was not inclined to agree as to albuminuria being an absolute contra-indication to their use. Mr. Meredith's very proper question as to why Porro's operation was not preferred to the Cæsarian section had been sufficiently answered by the remarks of the two subsequent speakers. As they had said, the weight of evidence in Germany, where the experience of these operations is greatest, is at present decidedly in favour of Cæsarian section, and therefore he thought that was the operation that ought to be performed whenever there was no special indication to the contrary. Dr. Champneys' criticism as to the fallacy of relying on the uterine souffle as a guide to the position of the placenta he fully accepted. At the same time he thought the situation of the bruit might be useful as an auxiliary to the evidence obtained by palpation in estimating the probable situation of the placenta, which is all that one could hope to do. At the best such an estimate could scarcely be more than a guess, though in this case the guess happened to be a good one. He trusted he had not overlooked any remarks that he ought to have noticed, and must again beg to express his thanks for the attention so kindly given to this paper.

THE MECHANISM OF THE THIRD STAGE OF LABOUR.

III. *The Separation and Expulsion of the Membranes.*

By Francis H. Champneys, M.A., M.B.Oxon., F.R.C.P.,
OBSTETRIC PHYSICIAN TO ST. GEORGE'S HOSPITAL.

(Received March 31st, 1886.)

(*Abstract.*)

The author reviews the literature of the subject, and the various views expressed. These amount to four: (1) The peeling off of the membranes by the traction of the descending placenta. (2) Separation by effusion of blood. (3) Wrinkling of the membranes by uterine contraction and retraction. (4) Separation of the lower pole of the ovum by retraction of the lower uterine segment.

The author dismisses (2), on the ground that the quantity of blood lost in an ordinary labour is too small to produce this result, and that, with the usual excentric implantation of the placenta, this mechanism would fail of its purpose. He criticises the expression "weight of the placenta," as having influence on the mechanism in the recumbent attitude, and also the expression "leaving (the process) to nature," as applied to its course in the recumbent attitude.

He explains the natural process as follows:

1. Separation of the lower pole of the ovum by retraction of the lower uterine segment during the "premonitory" stage of labour. This requires a complete "bag of waters."

2. Wrinkling and partial separation of the membranes by diminution of the internal surface of the uterus. This requires some escape of the waters.

3. Peeling off of the membranes by the traction of the descending placenta. This requires the evacuation of the uterus. The rupture of the membranes at the proper time is an integral part of the normal process. The first stage in the process seems calculated to prevent a very common defect, viz. the adhesion of the membranes round the lower uterine segment.

In the copious literature relating to the third stage of labour comparatively little space is occupied by the processes relating to the separation and expulsion of the membranes, indeed it is only quite recently that these processes, or rather the causes of their failure, have been discussed.

In the earlier notices we only find the explanation that the placenta in the course of its separation and expulsion drags the membranes and peels them from their subjacent attachments.

Thus, even Küstner (S. 39) says: "As we cannot believe that the decidua is separated (except at the placental site) by sliding movements of the uterine wall (because the decidua permits considerable sliding beneath it of the uterine wall without necessary detachment in the region occupied by the membranes), we can easily imagine that the separation that takes place in the ampullary layer of the decidua is generally due to the placenta which has escaped from the os uteri and drags the membranes after it."

An addition to this mechanism has been made by the school who lay great stress on the formation of a subplacental hæmatoma as an essential part of the mechanism under discussion. This view can be traced more or less to Solayrès; it was developed by Baudelocque and Schultze, and still further amplified by Dohrn (S. 546), who describes the process thus: "The process by which the placenta and membranes become separated without artificial interference has lately become known to us in its details. . . .

"Simultaneously with the last pain which expelled the child the placenta is usually detached. If we leave nature

fair play the placenta is gradually moved towards the os uteri, progressively detaching the membranes. Supposing the placenta to have been situated at the fundus, as usual, a blood-clot originating from the maternal placental vessels forms, which, becoming larger and larger, presses the placenta downwards, inverting the membranes and detaching them during their inversion. . . .

"The detachment of the membranes is effected in the gentlest way imaginable. A gradually increasing enlargement of the clot filling the bag of membranes and a slowly advancing inversion of the bag of membranes are expulsive forces of a delicacy which we cannot for our own part imitate with our manipulations; and if the easily torn structure of the fœtal membranes leave the uterus intact this depends essentially on the uniformity and gentleness of the natural pressure which acts from above."

Schultze ('Deutsch. med. Woch.,' S. 690) practically gives the same account.

Ahlfeld (S. 51) adopts the same view even more strongly, mentioning (S. 52) increased "general pressure of the contents:" "As soon as the placenta moves a little lower down the uterus contracts or the hæmatoma increases, both processes which drive the already effused blood between the separating layers of the decidua, so that an exertion of force by means of the hæmatoma cannot be neglected."

Ribemont (p. 55) remarks that the placenta is often completely born and the membranes not yet completely separated. This he attributes, not to any more intimate adherence in the non-placental decidua, but to the thinness, suppleness, and elasticity of the membranes, which admits of considerable retraction on the part of the uterus without their separation. "We are absolutely ignorant of the cause of the detachment of the membranes." Sometimes the fœtus separates them by pushing them before it; at other times the detachment probably begins near the placenta. The detachment is completed by the gentle traction of the descending placenta. The *rôle* played by

effusion of blood is intelligible but is not insisted upon. This *rôle* is the same as that insisted on by Dohrn and Ahlfeld.

It will be observed that it is taken for granted that contraction and retraction of the uterine walls cannot separate the membranes. The above statement as a whole is and pretends to be nothing more than a confession of ignorance.

Dr. Barbour, however, has studied the relation of the membranes to the uterine wall in cases of Porro's operation. He finds that "as the result of the diminution in area of the interior surface of the uterus the membranes are thrown into folds. The amnion separates in great part from the chorion and is thrown into a series of primary and secondary folds, producing an appearance of branching papillæ; there is no effusion of blood below the amnion. The chorion and decidua are thrown into broader and more regular folds, producing a wavy appearance.

"The membranes are detached to a certain extent by the contraction of the uterine wall resulting from the escape of the liquor amnii and fœtus, and probably still further by the squeezing of the folds of membranes against one another and the placenta during subsequent uterine contractions; their expulsion is effected by the placenta dragging them after it as it is expelled. When the membranes do not rupture during the first stage this process will of course be modified."

It is remarkable that in Dr. Barbour's description the membranes were partially separated, even when the placenta (whose site measured some four and a half by four inches) was still completely adherent. Does this imply relative inertia of the placental site?

Another view has still to be mentioned, namely, the detachment of the lower pole of the ovum by uterine retraction. This is well set forth by Dumas, who, in a learned and elaborate paper, evoked by a strange theory propounded by Dr. Byford, of Chicago, on the "Functions

of the Membranes in Labour," discusses the formation of the bag of waters. He says (p. 186) : "The inferior part of the ovum which, during pregnancy, adhered to the lower segment of the uterus, is found at the commencement of labour to be in relation with the walls of the cervix." This change can only be due either to an enormous distention of the lower part of the bag, or to a detachment of the membranes from the lower part of the uterus. The latter is the true explanation, and is illustrated by the detachment of the membranes from the lower uterine segment discovered on the induction of premature labour by the method of Krause in some cases, (the bougie meeting no resistance till it has entered the uterus a certain distance) ; by the appearance of a "show" some days before the beginning of labour in some cases ; and by the phenomena of placenta prævia.

He examines (p. 275) the changes which take place in the premonitory stage (effacement) and first stage (dilatation) of labour, and gives diagrams to illustrate the changes. He quotes the experiments of Duncan ('Mechanism of Natural and Morbid Parturition,' pp. 72-73, *et seq.*) on the tenacity of the membranes, especially as regards the "bulge of membrane at time of bursting" (column 18) when fixed to the open mouth of a tube which prevented all sliding. The projection varied between half an inch and two inches, very seldom reaching the latter amount, and usually amounting to three quarters of an inch to one inch. This negatives the idea of the whole production of the bag of waters being due to their distention, and favours the explanation given above. The same results from the consideration of the retraction which acts on the cervix and lower uterine segment, these parts being drawn up over the lower pole of the ovum. It is to retraction then that this separation of the lower pole of the ovum is due ; the general intra-uterine pressure keeps the bag distended and more or less rigid, and over this the cervix is pulled upwards, necessarily becoming dilated in the process.

The separation thus (according to Dumas) will take

place by drawing up of the lower uterine segment; this retraction also implies increase in the "meridional" dimensions as well as the "equatorial" dimensions of the lower uterine segment, which destroys the attachments of the ovum by disordering the mutual relations of ovum and uterus.

We have thus a variety of views:

(1) The peeling off of the membranes by the traction of the descending placenta.

(2) The formation of a hæmatoma, not only aiding the expulsion of the placenta, but also directly contributing to the separation of the membranes, by gradually enlarging the subplacental space and separating the membranes in concentric layers round its edge, and also by being forced between the membranes and uterus by uterine contractions.

(3) Wrinkling of the membranes by uterine contraction and retraction.

(4) Separation of the lower pole of the ovum by retraction of the lower uterine segment.

We have already criticised the theory of detachment by bleeding. The total amount of blood lost on an average in seventy labours was twelve ounces; and it takes seventeen ounces to fill a sphere twelve inches in circumference (twice the average placental diameter), which is the space figured by Schultze. Moreover, it seems gratuitous to suppose that even in fundal attachments of the placenta (which are very rare) the membranes must separate in successive concentric rings. It is far more probable that any fluid would find the easiest path, trickle along it, and at once relieve any tension in the subplacental space.

Moreover, separation of the membranes in successive concentric rings requires a quantity of blood continually increasing, even much above the quantity required for separation of the placenta.

Where the placenta is planted on either wall, such concentric detachment would soon be stopped by the escape of the blood from the lower edge, which would early be

reached. This would leave the upper and more extensive expanse of membranes still undetached, and the loss of blood would be in vain.

Ahlfeld uses the expression "weight of the placenta." We cannot think this can have anything to do with the separation or expulsion of the placenta or membranes in any essential degree when women are confined in any form of the recumbent position. Indeed, under these circumstances it cannot be said to have any weight. This leads us to remark on the expression often used with regard to the management of the third stage of labour, "leaving it to nature." What is nature? What is the natural attitude for delivery? Is the recumbent posture? We think not, although the safest and best. A woman, not more fatigued than most of the lower animals by the course of labour, would probably assume a squatting attitude instinctively to expel any substance distending the pelvic cavity; and it is well known that the sensations of expelling a fœtal head from the vagina and a mass of fæces from the rectum are often undistinguishable to the patient. The attitude of defæcation is probably, therefore, the most natural. This, however, is speculation. Still, the frequent failure of delivery of the placenta from the woman's body, if left to "nature," seems to indicate that the recumbent position is not the "natural" attitude for the expulsion of the placenta.

The other views are practically proved by direct observation. It remains to assign to each its several share. This we do not think has yet been done, and yet, together, they form a process of great beauty and illustrate the failure of the detachment of the membranes and their retention under various and very dissimilar conditions.

We have then:

(1) Separation of the lower pole of the ovum by the retraction of the lower uterine segment.

(2) Wrinkling of the membranes by uterine contraction and retraction.

(3) The peeling off of the membranes by the traction of the descending placenta.

The normal process we thus explain.

(A) The retraction of the lower uterine segment begins with the beginning of the "premonitory" stage of labour (= canalisation of the cervix as far as the os externum), which may commence any time before the onset of labour within two or three weeks.

Uterine contractions and retraction diminish the uterine capacity and render the bag of waters tenser; by this means, as explained above by Dumas, the lower uterine segment is drawn up over the lower pole of the ovum, causing a detachment of the ovum from the uterine wall (generally) in the ampullary or deeper layer of the decidua, this detachment proceeding to a varying distance from the os internum upwards, according to the amount of retraction reached before the bursting of the bag of membranes.

This process requires the maintenance of the bag of membranes.

The same process detaches the placenta in placenta prævia.

(B) The wrinkling of the membranes and their partial separation, as described by Dr. Barbour, probably begins early in theory, but practically it can make little advance until the uterine cavity is considerably diminished, that is until not only the waters have escaped but labour has considerably advanced. It is noteworthy that this wrinkling would produce little if any effect on the membranes over the lower pole of the ovum which are separated normally before rupture of the membranes.

(C) The peeling off of the membranes by the traction of the descending placenta requires no explanation. It implies the previous evacuation of the uterus.

The first part of the process (A) implies separation in the decidua, this being the plane of least resistance. Supposing this layer to be rendered tough by inflammation or other disease, the separation will take place in the plane of

least resistance, generally between the chorion and amnion. The chorion then remains attached to the decidua, and the amnion advances alone. To this we will not now further allude.

It will be seen that the rupture of the membranes at the proper time is an integral part of the process.

It is well known that fragments of membranes which adhere to the uterus are very commonly, if not most frequently, those situated at the lower pole of the ovum. The first process (A) seems (if we may speak of final causes) to be designed to prevent this. The second process (B) is also preparative and loosens the membranes generally, so that they yield to gentle traction on the part of the descending placenta (C).

The complete process is therefore as follows:

(A) The loosening of the attachments of the lower pole of the uterus very early in labour.

(B) The loosening of the attachments of the membranes generally, though less completely, later on in labour.

(C) The removal of the membranes already loosened, after the birth of the child.

[Discussion on this paper was postponed.]

TUBO-OVARIAN CYSTS.

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(*Abstract.*)

A TUBO-OVARIAN cyst is an ovarian cyst, usually unilocular, which communicates, by a considerable orifice, with the adherent fimbriated extremity of a dilated tube; the uterine end of the tube, though pervious, is rarely dilated, so that though there is a potentially free communication with the uterine cavity and vagina, it is an exceptional phenomenon for fluid to escape in this manner.

In this paper reference is made to the scanty literature of the subject, and an abstract is given of all recorded cases obtained, numbering nineteen, a description is given of a specimen exhibited, and the subject of their formation is discussed.

The literature of the subject is comprised in the original papers by Adolphe Richard, and in recent ones by Olshausen and Burnier.

The specimens are divided into two groups, a small group of four in which the ovarian portion of the cyst is multilocular, the tube communicating with one loculus, and a group of eighteen, in which the cyst is unilocular.

The question of unilocular cysts of the ovary is discussed, and these are identified with the larger unilocular cysts described by Olshausen.

The subject of the formation of tubo-ovarian cysts is subdivided in the following manner and receives the following answers:

That the dilatation of the tube, and the formation of the

ovarian cyst are usually secondary and not primary factors in the formation of tubo-ovarian cysts.

That the application of the tube to the ovary is physiological or possibly accidental.

That the permanent adhesion of the two is effected by adhesive inflammation.

That the communication between the two is generally either a primary occurrence or takes place at a very early period in the formation of the cyst.

References to the literature of the subject are given.

The literature of tubo-ovarian cysts is exceedingly scanty, and were it not for the recent papers of Olshausen and Burnier, there would have been little to add to the original paper by Adolphe Richard, in the 'Mémoires de la Société de Chirurgie de Paris' (vol. iii, p. 121), published in the year 1853, on certain cysts of the ovaries, for which he proposed the name of "Tubo-ovarian."

A careful search has led to the discovery of only nineteen recorded cases, and the specimen exhibited makes the twenty-second recorded specimen, as in two cases the condition was bilateral.

Case 1.—The first case recorded is by Blasius, 'Commentatio de Hydrope Ovariorum Profluente,' Halae, 1834.

A woman aged 27 died of cholera, with two tumours in the lower abdomen. At the post-mortem examination the uterus was found to be slightly enlarged, and contained a yellow gelatinous fluid. Both ovaries were converted into multilocular cysts. The Fallopian tubes, measuring nine or ten inches in length, were stretched over and adherent to the cysts; the right tube was pervious throughout and was full of the same fluid as the uterus, and was found to open into a small cyst of the right ovarian tumour.

This paper has been copied either first or second hand by most subsequent writers, and little of importance has been added to his original description. He regarded these cysts as being probably of not very rare occurrence, and by no means as exceptional curiosities.

In this paper Richard described four specimens, and in a later communication to the Medical Society of Paris in 1856 he stated that he had seen eleven specimens, and he estimated that a communication between the tube and ovarian cyst occurred in from 1 in 8 to 1 in 10 cases. His views on this point have not been borne out by subsequent records, indeed there are very few cases recorded or specimens preserved, and it is almost certain, if nowadays they were not very rare, there would be more of them in our museums and more descriptions of them in our text-books.

Case 2.—Richard describes the first case he met with as follows:—"I found in the body of a young woman, who had died from typhoid, a large ovarian cyst, and what I supposed was a piece of small intestine adherent to it, but on separating the parts I saw that this was the Fallopian tube. The whole left broad ligament was distended by the cyst, which was the size of a child's head and spherical, and to its anterior surface the tube adhered. Near the uterus the tube was of normal size, then it became gradually dilated until at its fimbriated extremity it was of the size of small intestine and convoluted; it was then lost on the wall of the cyst. The distended portion was filled with fluid which communicated directly with that in the cyst. On opening the cyst I recognised the true nature of the case.

"At a distance of two centimetres from the opening into the cyst the tube presented a sort of transverse ring representing its abdominal orifice. At this point the canal was very large and covered with longitudinal folds, which were evidently the fimbriæ united by membrane of new formation. The communication with the cyst was by a well-marked circular orifice, and on it were lost the remains of the fimbriæ."

Ovarian structures were found in one part of the wall of the cyst.

Case 3.—A few days after he met with a similar specimen in the body of an old woman. The cyst was smaller and its walls thicker than in the preceding specimen.

In order to preserve the specimen better, the cyst was not opened, so that the communication between the tube and cyst was not proved.

Case 4.—The third specimen was taken from the body of a woman who died of puerperal peritonitis. The ovarian portion of this tumour was not large; it was multilocular, and the communication with the tube was at its outer surface. Owing to the cause of death the parts were putrid and could not be preserved.

Case 5.—At the post-mortem examination of a young phthisical woman another specimen was found. "The ovary was considerably enlarged, and full of fluid; on opening it the distended tube was seen communicating with the interior of the cyst by a circular orifice. This condition," says Richard, "was, so to speak, the first stage of the formation."

Case 6.—Labbé in the 'Bulletin de la Société Anatomique,' May, 1857, p. 141, is reported to have described a case, but the report is so imperfect as to be of little value. It says, "M. Labbé showed a specimen of tubo-ovarian cyst of the right side, the mass being partly solid, partly fluid. On the left side was a tumour of the same kind."

Case 7.—Rokitansky, in the 'Allgemeine Wiener medizinische Zeitung,' 1859, No. 35, describes a specimen taken from the body of a woman aged 57. The right ovary was large, its tissue very thick and studded with small cysts. One, the size of a walnut, contained clear serous fluid, its inner surface was studded with brown pigment flakes, and into it opened the distended pavilion of the tube, forming a third part of the whole cyst; the

ends of the fimbriæ were visible as little warts on the *inner* surface of the cyst.

Case 8.—In the same paper he describes a second case, a woman aged 39, who died of pneumonia. The uterus was covered in front and behind with adhesions. The tubes were adherent to the ovaries, which were shrivelled and scarred. The left tube opened into a small thick-walled cyst the size of a bean situated in the left ovary close to the insertion of the ovarian ligament. The fimbriæ were lost in the cyst wall. The tube was scarcely distended.

Olshausen, in Lieferung 58 of the 'Deutsche Chirurgie,' S. 55, devotes an article to this subject. He states that in 300 ovariotomies he has met with three cases. The first is of great interest and its pathology a puzzle, for the fimbriæ are described as lying free and unaltered in the cavity of the cyst.

Case 9.—"The cyst was right sided, unilocular, the size of a fist, smooth externally, and contained thick, semi-fluid, reddish-brown masses and grumous material. The communication with the tube scarcely admitted a finger, and the dilated external portion of the tube formed the neck of the cyst, the shape of which he compares to a retort. *The fimbriæ passed unaltered, not separated or lengthened, and lay free in the cavity of the ovarian portion of the cyst;* the lumen of this portion of the tube lying in the midst of the fimbriæ. The tube contained thin bloody fluid, no coagula. A second quite narrow opening was found leading from the cavity of the cyst close to its neck, into what was thought to be the ovarian fimbria."

This tumour was removed by Olshausen from a woman aged 29, who had had three children, the youngest eight years old. For seven years she had had occasional attacks of metrostaxis, and for six months had suffered from acute peritonitis. The tumour lay in the cavity of the pelvis, closely fixed to the uterus, and could

only to a slight degree be raised above the brim. The left ovary was small and embedded in exudation.

Case 10.—The second case was that of a childless woman aged 34. The cyst was the size of a fist and lay in the pelvic cavity, unilocular, thin walled, with smooth lining containing thin serous fluid. The communication between the tube and cyst measured 5 cm. On the inner wall of the cyst a single fimbria, much elongated, was seen.

Case 11.—The third case* was that of a single milliparous woman aged 27, who for years had suffered from profuse and frequent menstruation and a tumour reaching to the epigastrium. At the operation the tumour was found to be multilocular and right sided, and exhibited the structure of the common proliferous cyst. The tube was much elongated, widened, and thickened, contained thick, dark brown fluid, and could be followed up into a still unopened cyst of the tumour the size of a fist into which the transition was sudden. This opening, when looked at from the cyst side, was strongly curled, and the fimbriæ pressed over on to the inner surface of the cyst as prolongations of the longitudinal folds of the tubal mucous membrane, spreading out in a radiating manner.

The left ovary was converted into a single cyst the size of the fist and into it the dilated tube entered.

Case 12.—Dr. Gustav Schentauer recorded a specimen in the 'Allgemeine Wiener med. Zeitung,' 1865, vol. x, S. 333, "Cystis Tubo-Ovarica Dextra." There is no clinical history given, only the report of the post-mortem examination.

The uterus was fixed to the rectum by adhesions.

* Wachsmuth having re-examined this specimen reports that it is not a tubo-ovarian cyst, but a multilocular cyst with an adherent hydrosalpinx ('Diss. Inaug.,' p. 19, 1885).

The right ovary formed a cyst nearly the size of a child's head. It was filled with thin serous fluid and communicated with the right tube by a circular well-marked orifice the size of a pea. The outer half only of the tube was dilated, but the remainder was pervious throughout.

CASE 13.—C. Hennig in the 'Monatsschrift für Geburtskunde,' Band xx, S. 128, describes a case in which two of the fimbriæ, elongated and filamentous, projected free into the cavity of the cyst. The canal of the tube was pervious throughout, and the cyst so loosely distended that he supposed that some of the fluid had escaped through the uterus. The cyst was unilocular and right sided.

CASE 14.—H. Burnier in a valuable paper in the 'Zeitschrift f. Geburtsch und Gynäkologie,' Band v, S. 357, describes a case.

A married woman, aged 29, had had one child nine years before. Ovariotomy was performed by Professor Schroeder.

The tumour was the size of a child's head, right sided and unilocular. The opening between the tube and cyst was the size of a mark piece, and Professor Schroeder was able by pressure on the tumour to squeeze some drops of fluid through the divided uterine end of the tube which was not dilated. The dilated portion of the tube was not convoluted. The mucous membrane of the tube was very thin, and of a bright red colour, and was continued through the opening into the ovarian portion of the cyst almost to its opposite extremity. The tube was lined with delicate, flattened, cubic epithelium. The wall of the cyst closely resembled that of parovarian cysts; it was smooth and shiny, and presented on microscopical examination Graafian follicles very irregularly distributed, but most marked where ovarian structures could be recognised with the unaided eye, namely, opposite the communication of the cyst and tube. (This was corroborated by Dr. Ruge.)

He quotes a case by Hildebrandt, the original account of which I have not been able to obtain. It is recorded in 'Die neue gynäkologishe Universitätsklinik zu Königsberg,' Leipzig, 1875 (or 1876), S. 109.

Case 15.—The cyst appears to have been unilocular, and owing to the extensive adhesions to the uterus, bladder, and intestines it was incompletely removed. The fluid contained much cholesterine and blood, and lymph-corpuscles in various stages of degeneration. The wall of the cyst was in some parts thick, in others thin, smooth inside and outside. The fimbriæ of the tube helped to form the wall of the cyst, so that the mucous membrane passed directly from the tube on to the inner surface of the cyst. The fimbriated end of the tube was so dilated that the index finger could be easily passed into it from the cyst.

In Band 6 of the 'Zeitschrift,' S. 87, Burnier describes two additional cases operated on by Professor Schroeder, but they are cases of multilocular cysts with adherent hydrosalpinx without communication.

Case 16.—On p. 168 of Doran's 'Tumours of the Ovary' a case is recorded. The specimen, which is No. 4574 in the Royal College of Surgeons' Museum, was taken by Dr. Goodhart from the body of a woman aged 38, who had died of gangrene of one leg.

The right ovary forms a cyst over two inches in diameter, and communicates with the adherent dilated Fallopian tube. There are numerous adhesions on the surface of the uterus due to perimetritis.

Case 17.—Barnes, in the second edition of his 'Diseases of Women,' p. 331, describes the case of a woman with an abdominal cyst who whilst waiting to be tapped was supposed to have passed an excessive quantity of urine with relief of her symptoms. The fluid was found to be albuminous and contained cholesterine. Six months after this the patient died, and a large empty cyst, with some

secondary cysts in its walls was found. A good-sized staff passed with ease from the cyst through the tube into the uterus and vagina.

Case 18.—Dr. Kelly records a case in the 'Transactions of the Pathological Society,' 1867-68, p. 290.

The patient, aged 30, had been under the care of Dr. Beale, she had not menstruated for a year, had never been pregnant, and had no history of uterine disease.

Both ovaries were converted into unilocular thin-walled cysts, communicating with the distended tubes by smooth circular openings. The uterine ends of the tube were closed. The fluid was dark brown and contained one third albumen.

The uterus was normal. There were no adhesions to indicate past inflammation.

Case 19.—Runge and Thoma record a case in the 'Archiv f. Gyn,' Band xxv and xxvi, S. 72. The patient was 37, married, nulliparous. The tumour was removed by Runge, and examined and described by Thoma. It was the size of a fist, right sided, very thin walled, and contained 150 c.c. of thin, not viscid, bright yellow fluid, sp. gr. 1013. No adhesions to neighbouring viscera. The ovary and tube were inseparably united and showed numerous thready adhesions at the point of junction. The cyst is formed chiefly by the fimbriated end of the tube, the ovarian portion being very small and only involving a small part of the ovary, which contained a large corpus luteum.

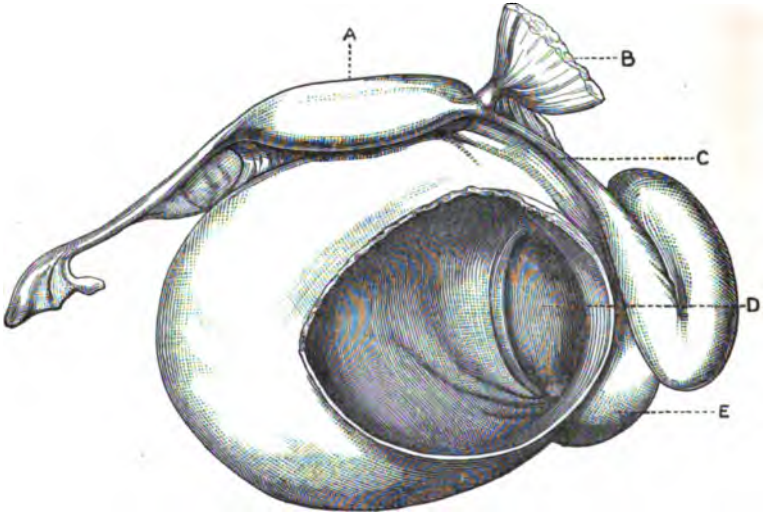
Thoma believes that in this case the union of the tube to the ovary was acquired, and was due to inflammation shown by the thready adhesions, and that a Graafian follicle happened to open into the adherent tube. A drawing is given.

The specimen exhibited is one for which I am indebted to Dr. Amand Routh. It has no clinical history of importance, and was removed at the post-mortem examination

of a woman aged 27, who died three and a half years after a severe injury to the spine causing paraplegia. There is no history as to the duration of the cyst.

CASE 20.—The specimen consists of the uterus and appendages, and a cyst, the size of a child's head.

The uterus presents the characters usually found in



A. Uterus.
B. Piece of omentum adherent.
C. Right tube.
D. Communication between tube and cyst; the folds are the result of its collapse.
E. Fimbriated end of tube.

virgins, and appears normal, also the parts of the left appendages that remain. The right ovary and tube present the following changes:—The ovary is converted into a very thin-walled unilocular cyst, measuring five inches by three and a half inches, to which the ovarian ligament is attached, and can be seen posteriorly passing from the

uterus at the usual site to the adjacent surface of the cyst; at this part of the cyst-wall ovarian tissue can be readily seen. The walls of the cyst are white and glistening, and for the most part very thin. The Fallopian tube measures nine inches in length, its outer third being greatly distended, while the inner two thirds are not enlarged. The fimbriated extremity is adherent to the ovarian cyst, and communicates with it by a large circular opening two inches in diameter. The tube has the ordinary characters of a hydrosalpinx, and the combined ovarian cyst and tube resemble a retort in shape with a convoluted delivery tube. No traces of the fimbriæ are visible on the inner or outer surfaces of the cyst.

The contents of the cyst were unfortunately lost, but the fluid was thin, watery, and almost colourless. The union of the tube and cyst appears to be due to inflammation, traces of which can be seen at the line of junction, and at the right cornu of the uterus and uterine end of the right tube, to which a piece of omentum remains adherent.

Schneidermühl describes a specimen taken from a mare as the first recorded in an animal. The cyst was small, left sided, there was no trace of past inflammation, and he suggests that the condition was congenital ('Deutsche Zeitschrift f. Thiermedicin.,' Band 9, S. 279).

A total of twenty recorded cases, including the one I have described, supposing also there may be a few more which I have overlooked, does not point to a frequent occurrence of these remarkable cysts, and indeed they must be very rare, for their characteristics are so marked that they would not easily escape recognition.

In two of the twenty cases here recorded the condition was bilateral; thus we have twenty-two specimens for comparison.

In eighteen of these specimens the ovarian portion of the cyst was unilocular, and in four only was it multi-

locular. All the unilocular specimens are described as being of a very moderate size, not larger than a child's head, thirteen being of this size, or the size of the fist; five were quite small, the size of a walnut or even smaller. Two of the multilocular cysts were evidently large, as in ordinary cases, one was the size of a child's head, and the size of the other is not given.

Of the eighteen cases in which the cyst was found on one side only, in six the side is not stated, but in ten it was the right side, and only two were on the left side.

Excluding the multilocular cysts, the walls are generally described as being very thin, translucent, smooth inside and out, and their contents a thin clear watery fluid, and in one the sp. gr. was 1013.

The walls are composed of connective tissue, and lined internally by low cubical or flattened epithelium.

As regards the tubal portion of the cysts, these differ chiefly in the degree of distention, and, with the exception of the extraordinary case of Olshausen, in which the fimbriæ were found free in the cavity of the ovarian portion of the cyst, they present very similar characters. The tubes in these cases are divisible into three parts, the fimbriated end enormously dilated and blended with the ovarian cyst, with which it communicates by a large circular orifice. The adjacent portion of the tube is very moderately dilated; the uterine end, though patent, with two exceptions was normal and undilated. In one of these two exceptions dilatation was sufficient to allow a good sized staff to be passed into the uterus.

We may therefore arrange these specimens into two distinct classes according to the nature of the ovarian portion of the cyst, a small class comprising not quite one fifth of the total number, in which the cyst is the common multilocular glandular proliferous cyst, with one loculus of which the distended tube communicates, and a much larger class comprising more than four fifths of the specimens in which the cyst is of an uncommon kind, anatomically unilocular. With these facts before us it must be

granted that the formation of tubo-ovarian cysts occurs under very exceptional conditions, for everyone has seen numbers of the common multilocular cysts, and yet only four cases are, I believe, recorded in which a communication has been formed between these and the tubes in this manner (omitting suppurating ovaries, cysts, and tubes, which not very rarely form communications with each other, but do not form tumours at all similar to these), whilst few of us have seen anatomically unilocular cysts of the ovary the size of a fist or a child's head, and yet a considerable number of these are recorded in which the communication has taken place. These exceptional conditions then are more prone to occur under the circumstances of the formation or growth of unilocular than of multilocular cysts.

An important fact to be noted is the remarkable resemblance to each other of the majority of the specimens, both in their anatomical characters, as given above, and in their clinical history, many of them being post-mortem specimens, having escaped discovery during life, and being likely to do so unless the modern method of bimanual examination was employed, their comparatively small size and evident tendency not to increase rapidly being sufficient to account for the absence of symptoms.

The question as to the formation of these tumours is one of great interest, but about which little can be stated with certainty. We may with advantage subdivide this problem in the following manner, in order to see if there is any point on which we have certain knowledge.

1. What is known about unilocular thin-walled cysts of the ovary?

2. What is known about distention of the Fallopian tubes with thin fluid, viz. hydrosalpinx?

3. Is the formation of the ovarian cyst primary or secondary?

4. Is the formation of the hydrosalpinx primary or secondary?

5. What is the mechanism of the application of the

fimbriated end of the tube to the presumably healthy or cystic ovary?

6. What are the means by which the permanent adhesion of the two is effected?

7. How is the communication between the two formed?

Before attempting to discuss these questions, which, if they could be satisfactorily answered, would leave little for future investigation, reference must be made to existing theories, that we may see how far they meet the different questions requiring elucidation.

Richard, in the original paper already referred to, made the following remarks:—"It is an occurrence altogether unusual in pathology that a cystic tumour almost at its commencement should, without inflammation, open into an excretory canal, and yet this is the natural result of the physiological periodic action which occurs each month in the genital organs of women;" and in a later paper he gives the following theory ('Bull. de Thérap.,' T. 52, p. 154).

"A Graafian vesicle, doubtless that about to preside at the approaching menstruation, is attacked by the morbid condition which leads to the formation of an ovarian cyst, but the ovum contained in it arrives at maturity. To receive it the pavilion of the tube is applied to the vesicle. This empties itself, and so far we see only the wonderful operation which each month provokes the spontaneous expulsion of the ovum. But the scene changes, the diseased vesicle does not close, for in place of the formation of a corpus luteum it continues to pour into the tube the morbid fluid which distends it. Such is the formation of tubo-ovarian cysts."

Klob (in his 'Pathologische Anatomie der weiblichen Sexualorgane,' 1864, S. 347) says, "Of the origin of these cysts there can hardly be a doubt; the pigmented inner surface of the cyst-wall represents the yellow structure of the corpus luteum. The pavilion of the tube has embraced the ovary at the time of menstruation at a spot where the ripe follicle is about to burst. After the bursting the fimbriæ have not receded from the ovary, and the

secretion of both cavities leads to their dilatation. It is remarkable in such cases that the ovarian portion of the cyst is always the larger part, although one can see that the pressure of the secreted fluid could more easily cause hydrops tubarum than dilatation of so resisting a structure as the ovary."

Veit (in his 'Krankheiten der weiblichen Geschlechtsorgane,' 1867, S. 480), discussing Richard's theory, says, "As in the meanwhile this supposed physiological approach of the fimbriæ to the ripe follicle is at least very doubtful, it appears to us much more probable that a catarrh of the tube and of the follicle form the origin of these cases. This causes at the same time the union of both organs, and afterwards brings the growing cysts into communication . . . Most of the cases recorded, in which a periodical emptying of the cyst took place through the uterus, were simply cases of hydrops tubarum."

These abstracts contain the essential points of all that has been written on the subject, and raise a point of great importance about which there is much difference of opinion, namely, the action of the Fallopian tubes.

With regard to the first question raised, it is clear that there is some definite relation between tubo-ovarian cysts and thin-walled unilocular ovarian cysts. What is known regarding these latter cysts?

There are two forms; one, though practically unilocular, is not actually so, and is formed by the opening of secondary cysts into the main cyst cavity, and bears all the other characters of the common multilocular cyst. The multilocular cyst is now generally believed to be formed from undeveloped Graafian follicles which have become cystic in the course of their atrophy. The other form is well described by Sir James Paget in his 'Surgical Pathology,' and by Dr. West in his 'Diseases of Women.' The following account is an abstract from Olshausen's paper in the 'Deutsche Chirurgie,' S. 46, entitled, "Unilocular Cysts of the Ovary, Dropsy of Graafian Follicles."

In these cases the cysts are numerous, as many as ten

or twenty, but they do not generally double the size of the ovary. Often one is the size of a fist or child's head, and in rare cases may reach the size of a large gravid uterus, or even larger. As a rule, it is only one cyst which attains even the size of a hen's egg, and the larger the tumour the more common is it that no small ones are found, so that it is anatomically unilocular. In cases in which none of the cysts reach a considerable size, the ovary is but slightly enlarged, and the larger cysts have a tendency to come to the surface, while the smaller ones remain concealed in the substance of the organ.

The fluid is thin, clear, and serous, seldom brown or blood coloured.

The wall of the cyst is pale grey, and in some parts translucent, and the smaller the cyst the lower is its connection with the surrounding stroma. It is lined with the cylindrical epithelium which characterises the follicles.

In the case of larger cysts which protrude more distinctly from the surface of the ovary the most prominent part of the wall becomes much thinner, so that the cyst resembles a water vesicle, and in the outer wall the vessels can be seen with the naked eye. Sometimes the cyst is found to have burst, leaving the remainder of the ovary normal. Rarely the ovary is found to be transformed into a bunch of unilocular cysts the size of beans, the intervening stroma having disappeared, and the cysts being loosely held together by scanty connective tissue.

Commonly these cases have no clinical importance because they give rise to no inconvenience, and the enlargement of the ovary is not recognised.

It is generally believed that these cysts arise in a dropsical distention of mature, or almost mature Graafian follicles, and, perhaps, in a dropsy of a corpus luteum. Such a cyst Mr. Willett removed at St. Bartholomew's Hospital, the fellow to a large multilocular ovarian cyst. The cyst measured about two inches in length.

There is probably another form of unilocular ovarian cyst, which, so far as I know, is not described.

I have met with two specimens, both very similar; they are both contained in the broad ligament, and the corresponding ovary is absent; both are about the same size, the size of the fist; both have extremely thick walls, thicker by far than any other ovarian cysts I have seen. Both communicate with the undistended Fallopian tube by a small opening; both undoubtedly suppurated, one having been opened by Dr. Matthews Duncan through the vagina, the other having opened spontaneously into the rectum.

The first of these specimens is in the museum of the Middlesex Hospital, recorded as an abscess of the broad ligament. Mr. Sutton kindly gave me permission to take the specimen and examine it. The other I obtained at a post-mortem examination.

The Middlesex specimen is right sided, the other left sided. Both these specimens differ so distinctly from the cases alluded to in this paper that I have not included them.

It will be seen that Olshausen's description of unilocular ovarian cysts will apply to the ovarian portion of unilocular tubo-ovarian cysts, in fact they must be identical.

The second point is, what is known about hydrosalpinx? Hydrosalpinx is a chronic distention of the outer portion of a Fallopian tube, due to closure of its fimbriated end, and probably an increased as well as an altered secretion of its mucous membrane. The fluid distending the tube is thin watery mucus. The closure of the fimbriated orifice is due to inflammatory adhesion. If this inflammation involves the mucous lining of the tube and is acute, pyosalpinx occurs in place of hydrosalpinx.

It is not necessary for the uterine end of the tube to be closed for the production of either pyo- or hydrosalpinx.

In hydrosalpinx of long duration the tube becomes greatly distended, its walls become very thin and translucent, and it loses its mucous lining, or at least, the folds

are obliterated, and the columnar epithelium is destroyed. The tubal portion of tubo-ovarian cysts corresponds to an ordinary hydrosalpinx of long duration, and it is evident that the distention of the tube in these cases may either follow or precede the formation of the communication between the tube and ovarian cyst; either, the tube and a cyst having become adherent and formed a communication with each other, the tube has become distended by the passage of the contents of the cyst into it; or a previously existing hydrosalpinx has become adherent to an ovarian cyst, and a communication has formed between them; or the orifice of a tube becomes obliterated by adhesion with a healthy or cystic ovary, the tube becomes distended, and immediately or at a later period forms a communication with a cyst in the ovary. This brings us to the consideration of the question as to which, if either, of the two conditions is primary, the formation of the ovarian cyst, or of the tubal cyst?

Before discussing this, we may easily dispose of another question which will leave the way clearer for discussing the most difficult and important question of all, namely, the application of the tube to the ovary, and its fixation there.

The union of the tube to the cyst is evidently effected by the formation of adhesions between the free ends of the fimbriæ and the surface of the ovary or cyst, the same process uniting the free ends of the fimbriæ to each other, and the evidence of this is given in many of the descriptions of the specimens, filamentous or larger adhesions being found, the remains of previous perioöphoritis, though generally of a slight character. There can be no doubt that the union of the two parts is by adhesive inflammation.

If the commonly accepted theory of the application of the fimbriated end of the tube to the ovary during ovulation and sexual excitement had any sufficient evidence in its favour, especially if the application was proved to be of some considerable duration, we could then accept Richard's theory, and be relieved of much difficulty in

investigating the pathology of these tumours. Although there is no real evidence, it has long been thought that this is the case, and it is easy in the post-mortem room to apply the tube to almost any part of the ovary in this manner, and so to make it appear probable that such is the normal method. It is also difficult to conceive how the ovum can reach the tube unless the tube is approximated in this way, a hypothesis being that the action of the cilia of the epithelial lining of the tube causes a current towards the orifice of the tube along which the ovum is carried.

Until the evidence in favour of the physiological embracement of the ovary by the tube is more complete we must not accept it as a fact upon which to base a theory, but we may use the fact of the occurrence of these cysts, and the observations which have been made in the post-mortem room, of the ovary being embraced by the tube, to prove that the fimbriated end of the tube may be applied to the surface of the ovary and ovarian cysts, in the manner commonly believed to occur during ovulation and at other times, and therefore that the absence of an evident mechanism for their approximation can no longer be used as an argument against this theory.

That this must be a vital phenomenon is sufficient to account for the rarity of the observation in the post-mortem room unless pathological adhesion has taken place, and the fact that it is a condition allied to the sexual feelings, and likely to be influenced by the fear and dread of an approaching operation would, apart from the action of anæsthetics, account for its not being found in operations exposing these parts.

If we reject this as a physiological occurrence, we are left with only one alternative, namely, that it is accidental, and the rarity of such observations and of these cysts points to this possibility, but it leaves us without an explanation, and I do not think it is correct.

If the application of the tube to an ovarian cyst occurs, it must take place while the cyst is small, for if the tube

becomes stretched and elongated by the growth of the cyst (and this chiefly occurs with broad ligament cysts), the tube being tightly stretched and adherent to the cyst, it would be everted by tension of the ovarian fimbria, and the abdominal orifice and the mucous surface of the fimbriæ are turned away from the surface of the cyst (as in a specimen exhibited), their peritoneal surface being in contact with the cyst.

In considering the formation of the communication between the tube and the cyst we have two alternatives, either the communication exists from the first, or it forms at some subsequent period. Richard's theory is founded on the first of these alternatives; he supposed that the communication is formed by the bursting of a ripe follicle into the embracing tube, and that the dilatation of both is secondary; the tube being caught in this position and fixed there by an attack of adhesive inflammation. It is hardly necessary to consider any disease of the tube or follicle to be present in such cases, as it is known that if the abdominal orifice is closed the tube is generally dilated, and there seems to be no reason why the follicle should not dilate also. Klob has remarked that one would expect greater difficulty in the dilatation of the follicle than of the tube, but gives no reason for such an opinion; the ovarian stroma must be very elastic to allow the formation of Graafian follicles, and in only one of the twenty-two specimens is it recorded that the tubal was the larger portion of the cyst.*

Supposing that a tube has become adherent to an ovarian cyst and subsequently dilated, it would appear to be probable that the two would in course of time communicate, though not necessarily, as in two cases of Schroeder (recorded by Burnier in the 'Zeitschrift f. Gyn.,' Bd. vi, S. 87, wrongly as tubo-ovarian cysts) no communication was present in either case.

Thornton's cases, recorded in vol. xxi of our 'Transactions,' p. 119, are of great interest in relation to this

* See Runge and Thoma's case (No. 19).

point. He mentions four cases, and Doran, in his work on tumours of the ovaries, mentions two others, in which both Fallopian tubes were found adherent to a single cyst which involved both ovaries. It is much more likely that in these cases both ovaries were cystic, and the cysts united, than that a healthy ovary became amalgamated with a cyst of the opposite side.

The rupture of secondary cysts into the main cavity of a common proliferous cyst, or into the peritoneal cavity, is well known and has been clearly demonstrated by Mr. Doran. In these cases the wall has become thinned and its nutrition interfered with to such an extent that it has given way at the weakest part.

In such of the cases here recorded as have minute details given of the appearances seen at the line of union of the cyst and tube, no mention is made, and in the specimens I have seen there are no appearances visible, of there having been any rupture of the cyst into the tube corresponding to those seen in the wall of ruptured cysts, namely, a prominent ring with smooth edges projecting slightly into the main cavity, and this absence would go far to prove that the communication occurred at a very early stage if not at the commencement of the formation of the cyst, for if a cyst the size of a hen's egg, or even a much smaller one, opens into another it leaves well-marked signs of having done so.

For this reason, as well as from the extreme rarity of a communication forming between common multilocular cysts and the tubes, also because of the evidence these cysts bear of long duration, though rarely attaining a large size, it is to be concluded that the tubo-ovarian cysts are tubo-ovarian from the commencement and that it is not correct to consider these as cases of attempt at spontaneous cure of ovarian cysts, by the formation of a communication with the uterus and vagina and so permitting their spontaneous evacuation.

We may attempt to answer the questions given above in the following way.

That the dilatation of the tube and the formation of the ovarian cyst are usually secondary and not primary factors in the formation of tubo-ovarian cysts.

That the application of the tube to the ovary is physiological or perhaps accidental.

That the permanent cohesion of the two is due to adhesive inflammation.

That the communication between the two is generally either a primary occurrence or takes place at a very early period in the formation of the cyst.

And that Richard's original theory of their formation is probably correct.

Literature of Tubo-ovarian Cysts.

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Olshausen. Deutsche Chirurgie. Lief. 58, S. 55.

H. Burnier. Zeitschrift f. Geburt. und Gyn. Band v. Inaugural dissertation. 1880.

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Blasius. Commentatio de hydrope ovariorum profluente. Halæ, 1834.

Labbé. Bulletin de la Société anatomique. Mai, 1847, p. 141.

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DORAN. Tumours of the Ovary, p. 168.

BARNES. Diseases of Women. 2nd ed. p. 331.

KELLY. Trans. Pathological Society. 1867-8, p. 290.

RUNGE and THOMA. Archiv f. Gyn. B. xxv and xxvi, S. 72.

SCHNEIDEMÜHL. Cas. d. Tuboovarialcysten beim Pferde. Zeits. f. Thiermedicin. B. ix, S. 279.

See also

KLOB. Pathologische Anatomie der weiblichen Sexualorgane. 1864, S. 347.

VEIT. Krankheiten der weiblichen Geschlechtsorgane. 1867, S. 480.

[Discussion on this paper was postponed.]

JULY 6TH, 1887.

JOHN WILLIAMS, M.D., President, in the Chair.

Present—33 Fellows and 4 Visitors.

Books were presented by Dr. Ahlfeld, Dr. Crouzat, Dr. Braxton Hicks, Dr. Martineau, and the American Gynecological Society.

Sidney R. Alexander, M.B.Lond. (Upper Norwood); Milward E. Dovaston, M.R.C.S.; and William Thomas Law, M.D.Edin., were admitted Fellows of the Society.

The following gentlemen were elected Fellows of the Society:—Robert Ambrose, B.A., L.R.C.P. & S.Ed.; Henry Spelman Baumgartner, M.B.Dur. (Newcastle-on-Tyne); Murdoch Cameron, M.D.Glas. (Glasgow); William Growse, L.R.C.P.Lond. (Brentwood); John Hackney, M.D.St. And. (Hythe); Henry Algernon Hodson, L.R.C.P.Ed. (Brighton); Octavius E. B. Marsh, L.R.C.P.Ed. (Newport, Mon.); Thomas Berkeley Martin, L.R.C.P. & S., L.M.Ed. (Sunderland); Hugh Shapter Robinson, L.R.C.P.Ed. (Sunderland); John Shaw, M.D.Lond.; Thomas Tinley, M.D. Dur. (Whitby); Ernest Aston Otho Travers, L.R.C.P. Lond. (Sutton); and John Adam Watson, L.R.C.P.& S.Ed.

The following gentlemen were proposed for election:—Herbert C. Rowbotham, M.R.C.S.Eng. (Derby); and Albert Primrose Wells, M.A., L.R.C.P. & S., L.M.Ed. (Douglas, Isle of Man).

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ELECTRICAL INSTRUMENTS IN USE IN OBSTETRIC MEDICINE.

By W. E. Steavenson, M.D.

SPECIMEN OF CHRONIC ENDOMETRITIS WITH MICROSCOPICAL SECTIONS.

By P. Horrocks, M.D.

Dr. Horrocks showed a specimen of chronic endometritis with microscopical sections.

The disease had affected the whole of the mucous membrane lining the fundus uteri in a uniform manner, causing it to become thickened and injected with a shreddy surface. Nowhere was the muscular wall invaded so far as could be detected by the naked eye. Microscopically, the tubular glands were proliferating and the intertubular structure consisted of numerous small-celled tissue such as is met with in chronic inflammatory processes.

The patient, aged 53, had irregular hæmorrhages (post-climacteric) and a foul discharge from the interior of the uterus, and died after exploration of the cavity with symptoms of septic poisoning. The question of diffuse cancer of the mucous lining of the fundus uteri was mooted, and if such a condition ever existed, how was it distinguishable from chronic endometritis?

SEGMENT OF UTERUS AFTER CÆSARIAN SECTION.

By W. S. A. Griffith, M.B.

FIBROID TUMOUR OF THE VAGINA.

By Arthur H. N. Lewers, M.D.Lond., M.R.C.P.

The patient from whom the specimen was removed was a married woman, aged 37, who had had six children, the last, two and a half years before coming to the hospital. She complained of "a lump in the front passage," which she had first noticed soon after the last confinement, and of a dragging sensation in the left side (iliac region) and in the front passage for about the same time. For the last year menstruation had been too frequent and profuse. She had suffered from a yellow vaginal discharge and backache for many years.

The tumour shown was attached to the anterior vaginal wall rather to the right of the middle line. The part of the tumour nearest the vaginal outlet was a quarter of an inch from the urethral orifice. The tumour measured one and a half inches from before back, and one and a quarter inches transversely. Its circumference was less near its attachment, but it had no pedicle.

The uterus was freely moveable and not enlarged.

The tumour was dissected out with scissors. It was found to be very closely connected with the urethra, and some little care was necessary to separate it without injuring the urethra.

Within a month of the operation the cavity left after removal of the tumour had filled up completely. Microscopical examination showed that the growth was a fibroid tumour.

Fibroid tumours of the vagina are exceedingly rare. Hart and Barbour say that only thirty-seven cases are recorded in the whole of the literature. In most of the cases the tumour has been, as in this case, on the anterior wall.

TWO UTERI REMOVED BY VAGINAL EXTIRPATION.

By A. L. Galabin, M.D.

Dr. Galabin showed two uteri removed by total extirpation *per vaginam*. The first was from a patient aged 47. Metrorrhagia had come on after the menopause and had lasted for a year. The discharge had been offensive for three months, but was not manifestly so while the patient was in Guy's Hospital. The uterus was considerably enlarged in all its dimensions, and the sound passed four and a half inches. Even the gentlest use of the sound produced very free and prolonged bleeding. Mainly on this account Dr. Galabin thought that the disease was probably cancer of the body of the uterus, and decided to extirpate that organ through the vagina. On account of the size of the uterus it was impossible to retroflex it during the operation or to get the fingers over the fundus as a guide in opening the peritoneum between uterus and bladder. The uterus was drawn straight down and the broad ligaments tied in three loops. The patient recovered well. The interior of the body of the uterus formed a ragged ulcerated cavity; the cervix was unaffected. Microscopic sections of the uterine wall were shown and did not appear to give positive proof of cancer. There was irregular proliferation of glands like the early stage of cylindroid cancer, but the muscular wall was not infiltrated. It might be a question whether the disease should be regarded as merely ulcerative endometritis or as an initial stage of cancer.

The second case was remarkable for the fact that cancer affected the whole lining of the uterus, cervix, and body, with the Fallopian tubes, and also because there was no spontaneous hæmorrhage. The woman was thirty-six years old, and was admitted into Guy's on account of

profuse purulent discharge. The cervix formed an irregular ulcerated mass resembling cancer. The canal was so patulous that the finger could be passed into the interior of the uterus and felt an irregular surface within. There was bleeding only on rough manipulation, or the use of the speculum. A piece of tissue was snipped out and was found on section to have the structure of round-celled sarcoma. Dr. Galabin therefore decided to remove the uterus. The peritoneum was found to be adherent. It was impossible to get into any free peritoneal cavity at the pouch of Douglas; and that cavity was only opened when the top of the fundus was nearly reached in front. The uterus had to be drawn straight down as in the other case. The patient died from peritonitis within two days. At the necropsy it was found that the portion of the Fallopian tubes left behind had their inner lining superficially affected by the same disease. Microscopic sections were shown both of cervix, body, and Fallopian tubes, the structure of the growth being the same in all. During the fortnight which the patient had remained in the hospital both growth and ulceration had advanced rapidly, and ulceration had spread for about half an inch down the anterior vaginal wall.

ADJOURNED DISCUSSION ON DR. GRIFFITH'S PAPER ON TUBO-OVARIAN CYSTS.

Mr. Alban Doran observed that Dr. Griffith's definition of a tubo-ovarian cyst appeared to be sound, at least for practical purposes. The expression "ovarian cyst" might, however, be misleading as that form was always understood to imply the cystic disease of the ovary for which ovariotomy was performed. The other so-called cystic diseases of the ovary were extremely indefinite in character. Dr. Nagel had recently shown that the small cysts so frequently observed in inflamed ovaries were simply Graafian follicles, not even abnormally distended. The same observer believed that Rokitansky's theory of the cystic degeneration of corpora lutea was perfectly true, and Mr. Doran was of opinion that, in inflamed ovaries, the stroma often degenerated, leaving the larger follicles unaltered. Dr. Griffith did not appear to note that the uterine end of the Fallopian tube was probably strictured, in hydrosalpinx and pyosalpinx, by swelling of the mucous membrane, as in the case of the nares in coryza, and the male urethra in some forms of stricture.

Mr. Doran then exhibited some specimens which illustrated the relation of the Fallopian tubes to ovarian cysts, and the character of tubo-ovarian cysts.

No. 4563, Museum of the Royal College of Surgeons, Pathological Series, showed a hypertrophied tube and a portion of the wall of a large ovarian cyst. The fimbriæ were greatly increased in size, the tube was unobstructed. There had been acute inflammation of the cyst. This specimen showed that inflammatory conditions involving both the tube and an ovarian cyst did not necessarily cause

a tubo-ovarian cyst to be developed. Nevertheless, Mr. Doran admitted that inflammation might close the ostium of the tube and firmly bind the obstructed tube to the wall of a large cystic tumour. He had seen that condition only a month since, but had never detected a communication between a tube and a large cystic tumour. In the great majority of cases of ovarian cystoma the tube was elongated, hypertrophied to a certain extent, but not obstructed. Hence the rarity of tubo-ovarian cysts developed in the course of cystic disease of the ovary. Inflammation of a cystic ovary is a disease perfectly distinct from the common inflammation of the appendages, and seldom involves the Fallopian tube.

The next series demonstrated the perimetric or most frequent origin of tubo-ovarian cysts. In this point, Mr. Doran agreed with Dr. Griffith. Mr. Doran showed a pair of uterine appendages (4488c), which had been removed from a woman aged 23 by Dr. Bantock. The left tube was obstructed and dilated, and there was a cyst in the part of the corresponding ovary most distant from the tube. The right tube and ovary had undergone complete cystic degeneration, so as to form a cyst with one cavity. No. 4475, one of Mr. Tait's specimens in the College Museum, showed how closely the tube and ovary became united in chronic perimetritis. The formation of a tubo-ovarian cyst under such conditions could easily be understood. The ovarian part of the cyst was probably a follicle, corpus luteum or collection of such structures, left behind after the liquefaction of the ovarian stroma, or its reduction to a dense yet nearly fibrous tissue. After searching more than 700 specimens of ovarian cystic tumour, Mr. Doran had never discovered one true tubo-ovarian cyst, and had very seldom been able to detect any tendency to the formation of such a cyst. In the examination of under fifty cases of chronic inflammation of the appendages he had found two good examples of tubo-ovarian cyst; that just described and No. 4574 in the College Museum, and had observed that the tendency to the development of

tubo-ovarian cyst was very frequent, excepting where the ovary became cirrhotic and void of cysts and follicles. His experience appeared to be significant.

The next series illustrated ready-developed tubo-ovarian cysts. No. 4574, College Museum, was a remarkably fine preparation. The evidences of chronic perimetritis presented themselves to the naked eye, the relations of the tubes and ovaries were distinct. No. 4573 was described in the College catalogue as a Fallopian tube dried, but Mr. Doran believed that it was a tubo-ovarian cyst. A tube when dilated to an unusual extent did not assume the form of specimen 4573. No. 4571 showed a Fallopian tube much dilated, which weighed 4 lbs. 11 oz., including its contents, when removed. It was of the shape of a gigantic legume or peaspod, and very unlike a tubo-ovarian cyst. Dr. Griffith would find that No. 4573 was almost identical with No. 2935 in the museum of St. Bartholomew's Hospital. No. 2935 in turn would, when held in the same position, be found to be strikingly similar to No. 2924^a, St. Bartholomew's Hospital Museum, and No. 2924^a was Dr. Griffith's own specimen of an undoubted tubo-ovarian cyst, developed as a result of perimetritis. Hence No. 4573, Museum of the Royal College of Surgeons, and No. 2935 St. Bartholomew's Hospital Museum, appeared to be true tubo-ovarian cysts. Verification depended chiefly on anatomical relations; the microscope was valueless for the purpose, since the normal tubal and ovarian tissues are completely destroyed in these cysts.

Mr. Doran then observed that the first series of tubo-ovarian cysts were to be found in St. Thomas's Hospital, (FF 59, 61, 63) and he expressed some regret that Dr. Griffith had not examined and described them. Through the kind permission of Mr. Shattock he was enabled to exhibit them. FF 59 was a dried specimen; the communication between the tube and the ovary was evident; "in the place of the left ovary is a multilocular cyst" according to the catalogue, but Mr. Doran doubted that it was a true cystic tumour. FF 61, 63 deserved much considera-

tion. They appeared to suggest that tubo-broad-ligament cysts were possible, as in both specimens the tubes lay upon the cysts just as the tube lies over a common so-called "parovarian" cyst. No. 4574A, Museum of the Royal College of Surgeons also seemed to be of this character. It must, however, be remembered that a cystic ovary of any kind may force its way between the folds of the broad ligament. Besides in FF 61, 63, the point of communition as seen from the cavity of the cyst, was of the same character as the corresponding point where the still narrow part of the tube opened into the cyst in 4488c, where the nature of the cyst was, as already stated, self-evident. In FF 61, 63, St. Thomas's Hospital Museum, there are a few tags of old adhesions, evidence of perimetritis.

The most important factor in the development of tubo-ovarian cysts was the process by which the tube and the ovary came to communicate. Much misapprehension existed with regard to the nature of the fimbriæ, which were continuations of the plicæ of the tube protruding from the ostium. When the tube became obstructed the fimbriæ gradually retracted into the ostium, which was sealed up chiefly by perimetritic deposit, but certainly to some extent by exudations from the mucous surfaces of the fimbriæ themselves, as some German writers have already noted. Mr. Doran intended to show some preparations illustrating the normal and pathological anatomy of the fimbriæ. For the present. he would merely note that he did not believe that the normal ostium was the part of the tube which generally communicated with the cyst on the ovarian side. Dr. Griffith's comparison between the septa of secondary cysts in an ovarian tumour, so apt to break down, and the adjacent walls of an obstructed tube and a cystic structure on an ovary to which that tube adhered perfectly, explained the way in which the communication was generally established. Some Continental writers figured specimens where the true ostium was shown opening into the cyst in the ovary,

but the long thread-like bodies described as fimbriæ floating freely in the cystic fluid could not possibly be true fimbriæ. In obstruction of the tube, the fimbriæ and the plicæ were rapidly effaced, and in a tubo-ovarian cyst in its perfect stage the tubal and ovarian structures were reduced to a simple thin membrane.

In fact all direct pathological evidence, carefully weeded from learned arguments on single specimens, and on other men's monographs, tended to prove that tubo-ovarian cysts arose from the fusion of obstructed tubes and ovaries subject to the cystic degeneration frequent in chronic inflammation of the appendages. The tube and ovary became reduced to thin-walled cysts, and the septum which separated them broke down, after the fashion of septa in multilocular cystic tumours. The evidence in favour of congenital tubo-ovarian cyst was very defective. The most authentic case is that described by Dr. Paltanf in the 'Archiv für Gynaekologie,' vol. xxx, part 3, where the condition was bilateral. Gestation occurred in the left cyst and there was free communication between both cysts, the corresponding tubes, and the uterine cavity. The ovaries were flattened on the surfaces of the cysts. It was quite possible that in rare cases the fimbriated extremity of the tube might adhere to a cyst on the surface of the ovary, so that the cyst wall might give way, the ostium then opening into the cavity of the cyst, as in a case described by Wachsmuth. It was also probable that the obstructed ostium, bulging into a cyst on the surface of the ovary, might open up again; FF 59, St. Thomas's Hospital Museum, suggested this condition; but abundant evidence proved that the great majority of tubo-ovarian cysts were developed in quite a different manner already described.

Dr. Horrocks remarked that whatever might be the true history of the formation of so-called tubo-ovarian cysts, whether primarily beginning in the Fallopian tube or the ovary, or in neither, one thing was clear, viz. that these two structures were very apt to become welded

together where they were naturally in contact, and from observations made whilst working in another direction he believed that the starting-point of such unions was frequently the ovary.

Dr. GRIFFITH replied.

ON DIABETES INSIPIDUS IN PREGNANCY AND LABOUR.

By J. Matthews Duncan, M.D.

(Received December 1st, 1886.)

(*Abstract.*)

Dr. Matthews Duncan cites two cases of the disease. One of them was congenital and persistent, and in it there were eleven pregnancies. He narrates other two cases from his own practice, and in one of these there were four pregnancies during the currency of the disease. Diminution of the quantity of urea secreted appears to be of great importance in it. Similar cases of greatly reduced secretion of urea, with feelings of weakness and sickness, Dr. Matthews Duncan has observed in women not pregnant nor recently delivered.

In a paper published in the twenty-fourth volume of the Society's 'Transactions,' I described, as far as the cases at my disposal enabled me, the complication of pregnancy and parturition by diabetes mellitus. In this brief note I propose to give all I know regarding a complication which I believe to be still rarer, and which is certainly less known.

By the term diabetes insipidus I wish to imply only polyuria, and I retain it as a designation indicating contrast with diabetes mellitus.

The conditions of the urine in pregnancy and parturition give indications of health or of disease most highly valued by the practitioner, and the discovery by Lever of the connection between albuminuria and puerperal eclampsia

inaugurated an epoch in obstetrics. Much work has been done in this department, but still more remains to be done, and the present note is intended to form a small contribution to progress in it.

I have watched in several cases the urine of pregnant women known to be predisposed to puerperal eclampsia from having already suffered from that disease, and have noticed the great variations of this secretion in them. Copious at one time, scanty at another; specific gravity having a wide range, and being low when the urine is copious, that is, when there is polyuria in a moderate degree.

In all the cases now under special consideration the state of the urine as to quantity of urea has not been noted. In some of those where it has been investigated it is not deficient, in others remarkably deficient, and this deficiency must be a matter of the highest moment.

"Diabetes insipidus," says Dickinson,* "is sometimes remarkably influenced by intercurrent disease, and even by the progress and termination of pregnancy. . . . With regard to pregnancy, Dr. Hughes Bennett mentions an instance in which a woman became polydipsic without apparent cause in the fifth month of pregnancy, and ceased to be so two days after delivery. In other instances the whole process of childbearing has been accomplished (Matthews Duncan's case) with no modification of the disorder."

Dickinson has been represented as having often met with diabetes insipidus in pregnancy, but inquiry in several ways has failed to attain any confirmation of the statement.

Senator, in an article on diabetes insipidus,† says, "In one instance the diabetes, which had occurred during pregnancy, disappeared two days after confinement (Bennett); in another case, on the contrary, the disease, after lasting several years, disappeared on the commence-

* 'Diseases of the Kidney,' part 1, p. 205.

† 'Ziemssen's Cyclopædia,' English transl., vol. xxi, p. 1035.

ment of pregnancy; while in several other cases pregnancy had no effect whatever (Matthews Duncan)."

Senator, unfortunately gives no reference of any kind to the case he mentions, in which the disease, after lasting several years, disappeared with the commencement of pregnancy, and he has no ground for using my name in support of the assertion that in several other cases pregnancy had no effect whatever on the disease. I had then observed only one case. It has, however, to be added that Senator's "several other cases" may be the several pregnancies of my case, or of some other single case.

Bennett's case,* referred to by Dickinson and by Senator, may be summarized as follows:—"Polydipsia during the last four months of pregnancy, disappearing after delivery. Mary McDonald, aged 34, married. She is now (November 25th) in the seventh month of pregnancy, and two months ago her attention was directed to a strong craving she experienced for drinking water. She frequently took two or three tumblers-full at a time, and during the twenty-four hours swallowed half a pitcher-full, or about 200 oz. This has continued ever since, and latterly she has been troubled with cough and expectoration. Her digestive system is in every respect healthy, with the exception of moderate thirst, which is greatest in the morning and after every meal, even when for the most part fluid, as tea. Before she drinks there is experienced a sensation of dryness in the mouth, tongue, and fauces, and a feeling of discomfort arises if prevented from gratifying her desire. Three or four tumblers-full of water generally cause satisfaction and a feeling of satiety. She passes a large quantity of urine, which is voided frequently. The desire to micturate comes on immediately after drinking a large quantity of water, and the fluid is passed in a full and prolonged stream, over which she has no control. Percussion over the chest is everywhere resonant; but on auscultation, loud sibilating and sonorous râles are heard with expiration on both

* 'The Principles and Practice of Medicine,' 5th edit., 1868, p. 996.

sides over the upper two thirds of both lungs. Cough severe and paroxysmal. Sputum copious and watery. Pulse 104, weak. Skin dry. Other functions normal. During November and December the bronchitis gradually got better, and had disappeared on the 20th of the last-named month. She drank, in addition to a certain amount of fluid taken at meals, from 90 to 130 oz. of water daily, and passed from 130 to 250 oz. of urine, clear and watery looking, sp. gr. 1003. On December 27th she was delivered of a healthy boy, the labour being natural and quick. Next day her thirst and dryness of mouth greatly diminished. On December 29th no thirst; urine only 50 oz. She recovered rapidly. The polydipsia disappeared, and she passed from 40 to 70 oz. of urine daily up to January 3rd, when she, with her infant, were dismissed quite well from the Infirmary."

Dickinson* quotes from 'Medical Facts and Observations' (1792) a curious case of congenital polydipsia, the urine being "in proportion to what she drinks." "An extraordinary consumption of water was discovered (says he) in a humble French household, and traced to a child of three years old, recently come home from nurse, who from her birth had been affected with a drought beyond example. She drank every day nearly two pails of water, and was eventually driven from home by the ill-treatment she received in consequence of this expensive habit. When she was twenty-two a cobbler, unaware of her propensity, married her. He found that his earnings did not suffice to keep her in water, insomuch that he was fain to collect and liquefy snow and ice for her use. She drank four pails a day, of which the price was twelve sous. She made him the father of eleven children. When she was forty years old she was examined by a scientific commission, and drank in the presence of its members fourteen quarts of water within ten hours, and voided ten quarts of nearly colourless urine. She had fair health so long as she could drink freely. She drank most when

* 'Diseases of the Kidney, &c.,' part 1, p. 203.

pregnant, least when out of health. She was abnormally sensitive to alcohol. The urine, which was in proportion to what she drank, was fœtid. The disorder was not hereditary, nor could any cause be assigned for it beyond the fact that, in her infancy, her grandmother had been in the habit of giving her wine."

In the second volume of Tarnier and Budin's 'Traité de l'Art des Accouchements' (p. 51, 1886) there is a paragraph on exaggerated thirst. Some cases, say they, have been recorded in which thirst became acute and exaggerated. Esterle has seen a woman, six months pregnant, who had such thirst that she drank daily twelve to fifteen litres of pure water; appetite was completely lost, there was œdema of the lower limbs, and of the labia majora, and also some ascites. Urine was abundant, and there was diarrhœa. In another pregnancy the same woman had similar thirst, of which she did not get rid till after her confinement. In each case the fœtus, already dead or dying, was expelled at the seventh month.

Here I record two cases which caused me much anxiety. Both are imperfectly recorded. One occurred in hospital practice, and has been already published in the second volume of the 'Obstetrical Journal of Great Britain and Ireland' for 1874-5. In it the urea was not abnormally diminished, while the polyuria was great. In my second case urea was secreted in very small quantity. Both cases had a nearly identical general clinical aspect, such as words very imperfectly describe, and resembling that observed in cases of diabetes mellitus.

My first case I quote from the 'Obstetrical Journal.'

"Some time ago* I recorded a case of pregnancy and labour complicated with diabetes mellitus. The following imperfect case I publish because of its rarity, and because of the striking similarity between the general features of its course and those of the former. The similarity will not strike the reader as it impressed me, because some of the points were of a kind that does not admit of verbal

* See 'Edinburgh Medical Journal,' February, 1873.

description, such as the general appearance, and the character of the complaining.

"May 4th.—E. P—, aged 25, married, mother of four healthy children naturally born, has enjoyed pretty good health till very recently. She is now in the seventh month of pregnancy.

"She had, about fourteen years ago, a blow of great severity on the back of the head. Shortly after this she observed that she drank a great deal of water and that she had a great flow of urine. This copious drinking, which she restrains, has continued ever since, as also the great flow of urine, which necessitates getting up more than once during the night.

"Her present illness commenced about the beginning of April, with sickness and vomiting, blood being then thrown up in considerable quantity. Besides, there was much weakness, occasional headache, and severe pain, with tenderness, in the region of the left kidney and in the hypogastrium. These symptoms are still present.

"12th.—The pain and tenderness in the region of the left kidney are now greatly less, but there is worse pain and tenderness now in the region of the right kidney.

"17th.—Pain in region of right kidney greatly complained of. Much restlessness and thirst.

"18th.—Miscarriage at 1 a.m. The child survived five hours. Feels very weak.

"19th.—Slept last night only for an hour or two. Is really and feels very ill. Great tenderness on right side of abdomen down as far as iliac fossa. Takes milk and beef-tea.

"20th.—Is better. The renal pains continue. Is troubled with cough.

"23rd.—A large piece of decidua was discharged this day, of irregular form, but as big as three inches square. The pain in the kidneys and the sickness have ceased.

"26th.—One grain of codeia was given in pill thrice daily, and continued on the 27th, but as it caused headache, sickness, and giddiness it was discontinued.

"June 1st.—She left the hospital, saying she was now quite well, or at least as well as she generally is.

"The urine contained no albumen, no sugar, but a considerable cloud and deposit of mucus. It was light straw-coloured, not transparent, and of acid reaction.

"The following table supplies some interesting data as to the urine, the pulse, and the temperature. The quantity of urea was determined by the nitrate of mercury process of Liebig.

Date.	Quantity drunk.	Quantity passed.	Specific Gravity.	Urea.	Pulse.	Temperature.
	Oz.	Oz.		Grains.	Noon.	Noon.
May 6	—	140	1012	480	—	—
„ 8	—	160	—	—	—	—
„ 9	—	134	—	—	—	—
„ 10	—	200	—	—	—	—
„ 11	—	170	—	—	—	—
„ 12	—	200	—	672	—	—
„ 13	—	216	—	—	96	99°
„ 14	170	230	—	—	—	—
„ 15	150	250	—	—	—	—
„ 16	—	300	—	—	—	—
„ 17	—	—	—	—	144	105°
„ 18	—	200	—	—	120	102·3°
„ 19	—	—	—	—	132	102·2°
„ 20	—	300	—	860	96	98°
„ 21	—	204	—	640	—	—
„ 22	—	260	—	655	—	—
„ 23	—	300	—	610	72	97·2°
„ 24	320	350	—	630	80	97·2°
„ 25	380	230	—	625	84	97·8°
„ 26	260	254	—	—	84	97·8°
„ 27	360	300	—	450	—	—
„ 28	380	320	—	417	—	97·4°
„ 29	400	320	—	—	—	—
„ 30	400	290	—	—	—	—
„ 31	400	240	—	—	—	—
June 1	400	270	—	—	—	—"

D. Y—, aged 22, married one year. She resided at a considerable distance from London, and was reported to me as going on comfortably and naturally in pregnancy till about the fifth month, when she had several "faintings," which were, however, only temporary feelings of weakness and faintness. In the sixth month, frequent

urination was observed, not from irritability of bladder, but from its quick repletion. She also complained of pain in the dorsal region of the spine, and in the left flank. In the course of the seventh month the vague complaint of pain and frequent urination was increased, and now there was failure of natural sleep. The urine was frequently tested for albumen and none was found. The specific gravity was 1012 or 1013.

In the beginning of the ninth month my attention was specially called to the case. I found the pulse natural in frequency, but intermitting. She complained of headache, of sickness, and retching without vomiting, and of frequent urination, specially during the night. The urine was not measured; it varied in specific gravity from 1008 to 1010; albumen $\frac{1}{10}$, no casts. Urea 2·18 grains per fluid ounce. [The Russell and West process was used in the quantitative determinations of urea.]

At another visit in the middle of the ninth month, pulse 60, temperature natural. Much thirst, and other previously described symptoms. Urine, specific gravity 1004, and another specimen 1010, no albumen, no sugar. About 240 ounces of urine passed daily. Urea 1·3 grain to fluid ounce.

About this time, or soon after, there was occasionally found a trace of albumen in the urine. The urea was found as low as ·5, or half a grain to a fluid ounce.

Two days before natural confinement at term, the pulse 68, temperature natural; urine 202 ounces, specific gravity 1008, urea 1·5 grain to fluid ounce, no albumen nor sugar. She had a general feeling of heatedness, and her mouth, and especially the tongue, felt hot and was red. Thirst was still considerable.

Ten days after delivery, and during an ordinary convalescence, the thirst and all other symptoms had disappeared. The urine had specific gravity 1011, urea 3·5 grains in fluid ounce, no albumen nor sugar. A month after delivery the urine was 80 ounces in quantity, and altogether natural.

She subsequently had an early abortion, and then, soon after her first child, she had another, prematurely born in the seventh month, but in neither of these pregnancies was there any recurrence of the diabetes nor of its symptoms.

In conclusion, I would again remark the clinical similarity of cases of diabetes insipidus and of diabetes mellitus, though those of the latter category wore a more serious aspect than those of the former.

I may also state my belief that the paucity of recorded observations of diabetes insipidus up till the present time is not a good or sufficient indication of the rarity of the disease. This insufficiency is attested by the circumstance that it is seldom looked for, it being unfortunately not common for practitioners to measure the quantity of urine passed, and not common and not easy for them to make or get a quantitative determination of the urea.

This paper contains reports of four cases of the disease in four different women; but of seventeen pregnancies with the disease, the eleven separate pregnancies of the French case, and the four of my first being counted.

This number of cases is so small as to make it mere trifling to proceed to draw from them any conclusions other than such as are quite on the surface. We may, however, venture to forecast, when the number is sufficient, a series of conclusions showing a pathology very like that of diabetes mellitus in pregnancy and parturition.

Before concluding, I add that I have observed similar cases of illness, with great reduction of the quantity of urea secreted, in women not pregnant. Such cases have as symptoms, weakness, loss of appetite, sickness; and in them the urine may be copious or scanty. And I may remind the Society of the views of Sir James Paget* on renal disorder in surgery, and of Sir Andrew Clark† on renal inadequacy.

* 'Clinical Lectures,' 2nd edit., p. 43.

† 'Med. Soc. Trans.,' vol. v.

THE MECHANISM OF THE THIRD STAGE OF LABOUR.

IV. *Some Causes of Retention of the Membranes.*

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(Received March 31st, 1886.)

(*Abstract.*)

THE author refers to the description of the process given in a former paper (supra p. 264, *et seq.*).

He shows that the "plane of least resistance" for separation of the membranes is in the decidua, generally in the ampullary layer. Any change which renders this more tough, or which renders any other layer more friable, will alter this "plane of least resistance." Thus, undue friability of the chorion, or less firm adhesion between chorion and amnion than between the layers of the decidua, will determine a separation of the chorion and amnion.

The early separation of the lower pole of the ovum tends to guard against a common defect, viz. failure of separation (retention) of the membranes round the os internum. Rupture of the membranes at the proper time is an essential part of the proper mechanism. The proper time is, in nature, when the os is about three to three and a half inches in diameter, and has a projection of three quarters to one inch. Premature rupture will prejudice the separation of the lower pole of the ovum. Too late rupture tends to produce prolapse of the bag, which is usually accompanied by giving way of the chorion and advance of the amnion alone. Undue or relatively undue toughness and elasticity of the amnion is equivalent to a tardy escape of the waters.

As regards the removal of the membranes by traction of the descending placenta, the author remarks that the membranes, as a whole, owe their tenacity principally to the amnion; the adhesion of the amnion to the chorion is no doubt one of the safe-

guards against retention of the chorion. Thus, any disorder of the first process of the mechanism tending to separate the two ovuline membranes, predisposes to retention of the chorion. An analysis of ninety cases bearing on the matter is appended.

The author concludes that—(1) The mechanism of the detachment and expulsion of the membranes is a complex act in three stages; (2) Timely rupture of the bag of membranes is an essential part of the proper mechanism, and too early or too late rupture alike predispose to retention of the chorion; (3) Disorder of any of the three stages in the mechanism tends to prejudice the whole process; (4) Among allied conditions may be mentioned too early or too late rupture of the membranes, prolapse of the bag of membranes, prolapse of the membranes (amnion) after delivery beyond the vulva; separation of the membranes found on examination of the placenta; retention of a ring of membranes round the lower pole of the uterus; retention of the whole chorion.

Practical Conclusions.—1. The membranes should generally be preserved till the os is fully dilated.

2. After this they are not only (in ordinary cases) useless, but they (that is, the persistence of the amnion) favour the retention of the membranes.

3. They should, therefore, usually be ruptured when the os is fully dilated.

4. In vertex cases, if the head has settled over the os uteri, the advance of a smooth, sausage-shaped protrusion of membrane points to advance of the amnion alone, which favours retention of the chorion.

5. Separation of the two membranes not only points to adhesion of the chorion, but renders its subsequent removal more difficult.

9. This axiom may be formulated: "When the membranes advance low in a vertex case, look out for retention of the chorion."

A consideration of the causes of retention of the membranes includes a discussion of all the causes which interfere with the process, whether residing in the membranes, including the decidua, or in the forces which should detach them, and which we have already enumerated.

Some of these causes, such as disease of the decidua rendering it tough and resistent, will not here be discussed though they must be invoked. Nor shall we here deal with morbid changes in the uterine walls (such as tumours) which interfere with their proper retraction and contraction. Nor do we, lastly, propose in this place to discuss the merits of various methods of conducting the third stage of labour.

Our inquiry will be limited to disorders of the natural *mechanism* of the detachment and expulsion of the membranes. If such simple causes are proved to be often competent to lead to imperfection of this process, much support will have been given to the theory of the mechanism of the process already enunciated.

The first act in the process is the separation of the lower pole of the ovum from the lower uterine segment by retraction of the uterus.

The bag of membranes is rendered more or less tense by uterine retraction and contractions, and over the lower pole of this the lower uterine segment is retracted upwards. This implies a gradual tensile elongation of the lower uterine segment in the vertical or "meridional" direction, and a gradual expansion in the horizontal or "equatorial" direction. The result is that the ovum and uterus cannot maintain their mutual relations, and a solution of continuity takes place in the plane of least resistance.

Now, the plane of least resistance is situated generally in the ampullary layer of the decidua. Supposing that this is toughened by disease, the solution of continuity takes place elsewhere, sometimes, perhaps, beneath the ampullary layer, sometimes, certainly, in the "compact" layer, sometimes in the *sub-chorionic layer*. In this case the chorion behaves as part of the uterine wall, and remains adherent to it, while the lower pole of the ovum, covered by amnion only, is laid bare by retraction of the lower uterine segment, and the bag formed by amnion only advances.

The same result will follow any change which alters the

plane of least resissance; thus undue friability of the chorion, or less firm adhesion between chorion and amnion than between the layers of the decidua, will determine a separation of the chorion and amnion.

One of the commonest places for small defects of the membranes is close to the hole in the bag, *i. e.* at the lowest point of the uterus. It is far rarer to find an isolated piece of decidua or chorion missing from the neighbourhood of the placenta; a piece of chorion missing from this place is generally part of a large piece extending down to the hole in the bag of membranes. The tendency towards this defect is generally provided for by the complete performance of the first part of the process consisting in separation of the lower pole of the ovum.

We have elsewhere remarked that the *rupture of the membranes at the proper time* is an essential part of the proper mechanism. The proper time is, in nature, when the os is about three to three and a half inches in diameter and has a projection of three quarters to one inch. Dr. Matthews Duncan has also shown that the amnion is the thinnest, most elastic, and toughest; the decidua the thickest, least elastic, and least tough of the membranes; the chorion has physical properties in these respects intermediate as it is also intermediate in position. Ribemont found the *amnion* give way first in the majority of cases ('Arch. de Toc.,' 1879, p. 673).

Supposing rupture of the membranes to take place (1) too soon: It is plain that the ovum loses its support by the escape of the waters, and this process of separation by retraction is interfered with. The chorion will remain unduly adherent to the lower uterine segment.

Supposing rupture of the membranes to take place (2) too late: The diminishing cavity of the uterus forces more and more of its liquid contents into the projecting bag. When this is longer than hemispherical its distending action ceases, and at the same time it tends, deprived of the support of the cervix, to prolapse more and more quickly.

Under these conditions the limit of elasticity of the

chorion may be reached long before that of the amnion, in other words, the chorion will give way and the amnion advance alone. Moreover, the loosening of the connections between the ovum and uterine wall dependent on wrinkling, as described by Barbour and already alluded to, is delayed and interfered with by the delay in the escape of the waters.

It has thus been shown that any change in the time of rupture of the membranes, either in the way of anticipation or procrastination, tends to invalidate the first process in the mechanism of the detachment of the membranes.

The effect of malpresentations in postponing the timely rupture of the membranes by the deprivation of the ball-valve action of the head need only be alluded to.

Undue, or relatively undue toughness and elasticity of the amnion is equivalent to a tardy escape of the waters.

Advance of the membranes like the finger of a glove or like a sausage may take place; such a projection may even reach or protrude from the vulva. This condition is known as "*prolapse of the bag of waters*" ("*Vorfall der Fruchtblase*"), and cases are not very uncommon. Leopold ('Mon. für Geburtskunde,' xiii, 1859, S. 139) records such a case, where, however, no details are given as to the condition of the placenta, nor as to the composition of the bag of membranes. Credé (ibid., S. 141) records a similar case in which the amnion alone formed a bag which projected five inches beyond the vulva, and was entirely stripped off the chorion up to the insertion of the cord. Osiander ('Handbuch der Entbindungskunst,' Band 2, 1802, SS. 432, 553, and 555) also mentions the occurrence.

Although prolapse of the bag is generally a sign of malpresentation it may be associated with vertex presentations under otherwise normal circumstances, the chorion giving way and allowing the tough and elastic amnion to protrude; the amnion being distinguished from the chorion by being smooth and slippery.

I cannot agree with Spiegelberg, who says ('Lehrbuch

der Geburtshülfe,' 1 Aufl., 1878, S. 548) : " Late escape of the waters is no drawback, even where it amounts to the so-called prolapse of the bag of membranes." I do not dispute that this often occurs with impunity, but that is a different thing from regarding it as a matter of indifference.

This " prolapse of the bag of waters " has lately been exalted into the ideal process by Dr. Byford, of Chicago, on account of its supposed value as a dilator in front of the fœtal head. Our study of nature negatives this view, and if we succeed in proving our point it will be seen to be generally injurious.

The birth of the child " in a caul " (" capite galeato ") sometimes consisting of both membranes, but generally of the amnion alone, and the birth of the whole uterine contents, which occurrences are germane to the present inquiry, will now be only alluded to.

Prolapse of the bag of membranes is generally marked before birth by an advance of the amnion alone (as above described), and after delivery it is usual to find the amnion partly or completely separated from the chorion, even as far as the insertion of the cord. Moreover, in such cases the amnion often protrudes from the vulva at or after the birth of the child.

Another cause of prolapse of the bag of membranes before and after the birth of the child will only now be alluded to. This will be seen to favour retention of the membranes also, though by a different mechanism.

It sometimes happens that the bag of membranes gives way, not at its presenting part, but at the edge of the placenta; this is especially liable to happen when the placenta is situated low down. In this case the course of labour forces the flap of membranes lower and lower down, since most of the waters are retained by the fœtal head, and in so doing tears more and more of the membranes from the placenta. After the birth of the child and the expulsion of the placenta into the vagina this tearing may go on to complete retention of the membranes.

In a case I recently observed the membranes were attached to the placenta by a strip not more than a quarter of an inch wide. By tying a ligature round the membranes, drawing them down, and then tying again as high as possible (three or four ligatures in all being used) the whole of the membranes were safely removed, the strip brought down by this device becoming larger and larger.

2. As regards the wrinkling of the membranes preparing them for complete detachment, little more can be said than the few words to be found above. The process cannot be watched, and we know too little about it to speculate. Undue adhesion of the chorion, or disorder of contraction or retraction, need only be mentioned. We observed in a former paper that this wrinkling would produce no effect on the lower pole of the ovum, which is separated normally before rupture of the membranes. This may help to avoid separation of the chorion and amnion at this important region.

3. As regards the removal of the membranes by traction of the descending placenta we have a few remarks to make.

The membranes as a whole owe their tenacity principally to the amnion. The adhesion of the amnion to the chorion is no doubt one of the safeguards against retention of the chorion in the ordinary course of the third stage of labour as above described. If any portion of the membranes happens to be torn off in the removal of the placenta, this adhesion is again valuable, and as a matter of experience it is far easier to remove bits of both membranes adherent together than of chorion alone.

Thus it is seen that any disorder of the first process of the mechanism, tending to separate the two ovuline membranes, renders the third process more difficult, predisposes to retention of the chorion.

Appended is an analysis of ninety cases bearing on the matter. It fully illustrates the importance of the time of rupture of the membranes, the presence or absence of prolapse of the bag before delivery and of the mem-

branes (amnion) after delivery, as bearing on the complete or incomplete detachment and expulsion of the membranes.

The following conclusions are offered:

1. The mechanism of the detachment and expulsion of the membranes is a complex act in three stages.

2. An essential part of the proper mechanism is the rupture of the bag of membranes at the proper time. Too late or too early rupture alike predispose to retention of the chorion.

3. Disorder of any of the three stages in the mechanism tends to prejudice the whole process.

4. Among allied conditions may be mentioned too early or too late rupture of the membranes; prolapse of the bag of membranes; prolapse of the membranes (amnion) after delivery beyond the vulva; separation of the membranes found on examination of the placenta; retention of a ring of membranes round the lower pole of the uterus; retention of the whole chorion.

5. (Practical.)

(*a*) The membranes should generally be preserved till the os is fully dilated.

(*b*) After this they are not only (in ordinary cases) useless, but they (that is the persistence of the amnion) favour the retention of the membranes.

(*c*) They should, therefore, usually be ruptured when the os is fully dilated.

(*d*) In vertex cases, if the head has settled over the os uteri, the advance of a smooth, sausage-shaped protrusion of membrane points to advance of the amnion alone, which favours retention of the chorion.

(*e*) Separation of the two membranes not only points to adhesion of the chorion, but renders its subsequent removal more difficult.

(*f*) This axiom may be formulated: "When the membranes advance low in a vertex case, look out for retention of the chorion."

Table of Cases bearing on Retention of the Membranes.

No.	Hosp. No.	Date of admission.	Presentation.	Time of rupture of membranes and size of os tincæ.	Prolapse of bag before delivery.	Duration of third stage and mode of delivery of placenta.	Prolapse of membranes after delivery.	State of placenta and membranes.	Remarks.
1	292	Nov. 1, 1883	1st vertex	Size of a shilling	—	15 minutes, expression	—	Portion of chorion 1½ × 3 in. was retained from adhesion just within os internum	Insertio velamentosa, chorion retained near insertion of cord.
2	294	„ 5, 1883	„	Full dilatation	Bag containing head almost on perineum, ruptured by finger	„	—	Half chorion missing	—
3	295	„ 5, 1883	3rd and 2nd vertex	Os tincæ size of a shilling	—	20 minutes, expression	—	Chorion detached from placental margin, torn into shreds; three quarters missing	Placenta seemed to be nipped by cervix.
4	301	„ 8, 1883	1st vertex	15 minutes after full dilatation	—	25 minutes, introduction of hand	The membranes followed the child at the vulva	Chorion 5 × 2½ in. adherent to anterior wall and subsequently removed by hand	—
5	309	„ 19, 1883	2nd vertex	Os fully dilated, membranes ruptured by hand	Large bag descended on perineum in front of head	15 minutes, expression	—	Chorion entire, amnion forming a caul on child's head	—

No.	Hosp. No.	Date of admission.	Presentation.	Time of rupture of membranes and size of os tincæ.	Prolapse of bag before delivery.	Duration of third stage and mode of delivery of placenta.	Prolapse of membranes after delivery.	State of placenta and membranes.	Remarks.
20	28	Feb. 1, 1884	2nd vertex	Full dilatation; ruptured by finger	Large bag in front of head nearly to perineum	25 minutes, expression; chorion removed by finger	—	—	—
21	38	„ 23, 1884	3rd vertex, face to pubes	„	Large bag in front of head presenting at vulva	Half-an-hour, expression	Amnion followed child outside	Amnion separated to insertion of cord; chorion complete bag	—
22	39	„ 24, 1884	3rd and 2nd vertex	3 hours before complete dilatation	—	20 minutes, expression	—	Chorion split from margin of placenta for 3 inches; amnion separated from most of placenta, and from chorion for about 2 inches round hole in membranes; otherwise forming a good bag	—
23	41	„ 26, 1884	1st vertex	Os tincæ size of a shilling 3½ hours before full dilatation	—	20 minutes, expression	—	Amnion separated from half placenta and from portion of chorion adjacent and nearest to ruptured membranes	—
24	52	Mar. 12, 1884	„	Full dilatation	Very large bag on perineum in front of head	20 minutes, expression	—	Amnion separated from chorion for about 5 inches round hole in membranes, and for about one third of placental surface	—
25	53	„ 13, 1884	„	Full dilatation; ruptured by finger	Large bag projected in front of head	20 minutes, expression	—	Amnion much separated from placenta	Head arrested at brim by slight contraction

	26	54	„ 13, 1884	„	20 minutes after full dilatation	Large bag in front of head distending perineum	25 minutes, expression	—	Amnion stripped off placenta up to cord; chorion forming a good bag	—
	27	55	„ 16, 1884	„	Labour far advanced on admission	—	20 minutes, expression	—	Amnion separate from chorion and from most of placenta; three quarters of chorion retained	Case included for sake of completeness
	28	96	May 14, 1884	„	15 minutes after complete dilatation	—	20 minutes, expression; removal of membranes by fingers	—	Three quarters of amnion hanging by a thread to insertion of cord, the rest attached to chorion; half the chorion split from edge of placenta and absent; a caul covered child's face	Pains strong; no water in front of head
	29	98	„ 17, 1884	„	Simultaneous with birth of head; ruptured by finger when covering child's face at vulva	Bag protruding from vulva in front of head	20 minutes, expression	—	Amnion separated from two thirds of placenta, and from chorion; also torn annularly 2 inches from placenta; chorion split from one third of circumference of placenta; a small part missing; the rest split annularly like amnion; chorion rotten	Both membranes apparently torn annularly round shoulders of child
	30	101	„ 19, 1884	„	Full dilatation; large bag nearly on perineum, ruptured by finger	Large bag nearly on perineum	30 minutes, expression	—	Amnion stripped up to cord; two good bags	—
	31	106	„ 24, 1884	2nd vertex	Nearly full dilatation; ruptured spontaneously	—	20 minutes, expression	—	Chorion and amnion separated; chorion 6 × 6 inches, torn from margin of placenta	—
	32	108	„ 26, 1884	—	Fœtus discharged in entire bag of amnion	—	1 hour and 20 minutes, traction	—	Chorion complete; bag thick, opaque, and yellow, much disorganised	Macerated fœtus; connection between two membranes slight

No.	Hosp. No.	Date of admission.	Presentation.	Time of rupture of membranes and size of os tincæ.	Prolapse of bag before delivery.	Duration of third stage and mode of delivery of placenta.	Prolapse of membranes after delivery.	State of placenta and membranes.	Remarks.
20	28	Feb. 1, 1884	2nd vertex	Full dilatation; ruptured by finger	Large bag in front of head nearly to perineum	25 minutes, expression; chorion removed by finger	—	—	—
21	38	„ 23, 1884	3rd vertex, face to pubes	„	Large bag in front of head presenting at vulva	Half-an-hour, expression	Amnion followed child outside	Amnion separated to insertion of cord; chorion complete bag	—
22	39	„ 24, 1884	3rd and 2nd vertex	3 hours before complete dilatation	—	20 minutes, expression	—	Chorion split from margin of placenta for 3 inches; amnion separated from most of placenta, and from chorion for about 2 inches round hole in membranes; otherwise forming a good bag	—
23	41	„ 26, 1884	1st vertex	Os tincæ size of a shilling 3½ hours before full dilatation	—	20 minutes, expression	—	Amnion separated from half placenta and from portion of chorion adjacent and nearest to ruptured membranes	—
24	52	Mar. 12, 1884	„	Full dilatation	Very large bag on perineum in front of head	20 minutes, expression	—	Amnion separated from chorion for about 5 inches round hole in membranes, and for about one third of placental surface	—
25	53	„ 13, 1884	„	Full dilatation; ruptured by finger	Large bag projected in front of head	20 minutes, expression	—	Amnion much separated from placenta	Head arrested at brim by slight contraction

26	54	„ 13, 1884	„	20 minutes after full dilatation	Large bag in front of head distending perineum	25 minutes, expression	—	Amnion stripped off placenta up to cord; chorion forming a good bag	—
27	55	„ 16, 1884	„	Labour far advanced on admission	—	20 minutes, expression	—	Amnion separate from chorion and from most of placenta; three quarters of chorion retained	Case included for sake of completeness
28	96	May 14, 1884	„	15 minutes after complete dilatation	—	20 minutes, expression; removal of membranes by fingers	—	Three quarters of amnion hanging by a thread to insertion of cord, the rest attached to chorion; half the chorion split from edge of placenta and absent; a caul covered child's face	Pains strong; no water in front of head
29	98	„ 17, 1884	„	Simultaneous with birth of head; ruptured by finger when covering child's face at vulva	Bag protruding from vulva in front of head	20 minutes, expression	—	Amnion separated from two thirds of placenta, and from chorion; also torn annularly 2 inches from placenta; chorion split from one third of circumference of placenta; a small part missing; the rest split annularly like amnion; chorion rotten	Both membranes apparently torn annularly round shoulders of child
30	101	„ 19, 1884	„	Full dilatation; large bag nearly on perineum, ruptured by finger	Large bag nearly on perineum	30 minutes, expression	—	Amnion stripped up to cord; two good bags	—
31	106	„ 24, 1884	2nd vertex	Nearly full dilatation; ruptured spontaneously	—	20 minutes, expression	—	Chorion and amnion separated; chorion 6 × 6 inches, torn from margin of placenta	—
32	108	„ 26, 1884	—	Fœtus discharged in entire bag of amnion	—	1 hour and 20 minutes, traction	—	Chorion complete; bag thick, opaque, and yellow, much disorganised	Macerated fœtus; connection between two membranes slight

No.	Hosp. No.	Date of admission.	Presentation.	Time of rupture of membranes and size of os tincæ.	Prolapse of bag before delivery.	Duration of third stage and mode of delivery of placenta.	Prolapse of membranes after delivery.	State of placenta and membranes.	Remarks.
33	112	May 30, 1884	4th and 1st vertex	Os just admitting finger 15 hours before complete dilatation	—	30 minutes, expression	—	Two entire bags; amnion stripped up to cord	—
34	115	June 3, 1884	2nd vertex	Full dilatation; ruptured by finger	Large bag projected far in front of head	20 minutes, expression	—	Amnion separated from two thirds of chorion and about seven eighths of placenta	—
35	119	„ 10, 1884	1st vertex	Full dilatation; ruptured by finger	Large bag in front of head nearly to vulva	35 minutes, expression	—	Amnion separated from nearly whole chorion; chorion thick, very rotten; part retained and removed by fingers	—
36	128	„ 19, 1884	2nd vertex	Nearly full dilatation	—	20 minutes, expression	—	Amnion entire; two portions of chorion retained, one 6 × 3 inches, the other 1 × 1½	—
37	131	„ 21, 1884	1st vertex	8½ hours before complete dilatation; os tincæ not larger than half-penny, rigid	—	30 minutes, expression	—	Two nearly complete bags; amnion (apparently at hole in membranes), having a piece of chorion 4 × 4 inches attached to it	—
38	134	„ 23, 1884	„	1 hour before first pains; 9 hours before complete dilatation	—	8 minutes, spontaneously	—	Small portion of chorion at hole in membranes completely separated; otherwise one entire bag	—
39	136	„ 27, 1884	„	Nearly full dilatation; ruptured by hand	Large bag protruding at vulva	20 minutes, expression	Amnion followed child outside vulva	Two entire bags; amnion almost entirely separate from chorion and from placenta	—
40	137	„ 28, 1884	„	10½ hours before	—	20 minutes,	—	Amnion separate from	—

					tion; os not larger than a penny					
41	141	July	2, 1884	3rd and 2nd vertex	Nearly full dilatation; ruptured by hand	—	20 minutes, expression	—	Portion of chorion round hole in membranes separated from the rest; otherwise both membranes forming a good bag	Annular separation of chorion round os internum
42	143	„	3, 1884	4th and 1st vertex; prolapse of hand	1 hour before complete dilatation; os tincæ size of florin	Long bag protruded	25 minutes, expression	—	Amnion separated from about half placenta, but adherent to nearly whole of chorion	Prolapse of bag probably due to prolapse of hand, which prevented plugging of cervix by head
43	165	„	22, 1884	2nd vertex	With birth of head	Membranes carried down with head	20 minutes, expression	—	Amnion separated from greater part of chorion, but not from placenta	—
44	168	„	26, 1884	1st vertex	Just before delivery	Large bag of water presented at vulva when os tincæ was size of a crown	15 minutes, expression	—	Both membranes much split; amnion quite separate from chorion and from placenta	—
45	171	„	30, 1884	„	Full dilatation; ruptured by finger	Large bag in front of head	20 minutes, expression, chorion removed by finger	Amnion followed child outside vulva	Amnion separated up to cord; chorion split from close to margin of placenta, mostly adherent to amnion, but several parts retained	—
46	172	„	30, 1884	Breech, right dorso-posterior	Half-an-hour after full dilatation, ruptured by fingers	Large bag in front of breech	20 minutes, expression	—	Amnion separated from greater portion of chorion and placenta; chorion, round hole in membranes, split off in a ring, and adherent to amnion	—
47	174	Aug.	2, 1884	1st vertex	Full dilatation; ruptured by finger	Large bag filled vagina in front of head	35 minutes, expression	—	Good bag; amnion separated from one third of placenta	—

No.	Hosp. No.	Date of admission.	Presentation.	Time of rupture of membranes and size of os tincæ.	Prolapse of bag before delivery.	Duration of third stage and mode of delivery of placenta.	Prolapse of membranes after delivery.	State of placenta and membranes.	Remarks.
48	176	Aug. 5, 1884	1st vertex	Full dilatation; spontaneously	—	20 minutes, expression	—	Amnion separated from half of placenta on side adjacent to rupture, elsewere attached to chorion; a piece of chorion, 1 in. square, adherent to amnion at margin of rupture, the rest round the rupture missing	—
49	178	,, 5, 1884	3rd and 2nd vertex	Full dilatation; ruptured by finger	Large bag in front of head as far as perineum	25 minutes, expression	—	Membranes split off; portion of chorion pierced by rupture, adherent to edge of placenta; amnion split up round cord	—
50	182	,, 9, 1884	1st vertex	Fully dilated; ruptured by finger	Large bag in front of head	20 minutes, expression	—	Good bag; ring of chorion round rupture separated almost completely; amnion separated round rupture and over half placenta	—
51	188	,, 11, 1884	,,	Size of crown; an hour before full dilatation	,,	20 minutes, expression	—	Two complete bags; amnion stripped from nearly whole of placenta	—
52	197	,, 24, 1884	,, forceps	Full dilatation; ruptured by finger	Large bag in front of head, outside vulva	25 minutes, expression	—	Two complete bags	—
53	200	,, 25, 1884	1st vertex	,,	—	40 minutes, expression	—	Amnion separated up to cord; nearly whole of chorion retained; removed by hand	—
54	201	,, 26, 1884	3rd and 2nd vertex	,,	Large bag in front of head	20 minutes, expression	—	Two nearly complete bags; amnion stripped up to cord	—
55	203	,, 28, 1884	,,	,,	,,	15 minutes, expression	—	Two nearly complete bags	—

				vertex	spontaneously			expression		most whole of chorion and placenta; half of chorion retained, one large piece with a round hole
57	213	„	6, 1884	„	Size of half-a-crown	Large bag protruding into vagina	35 minutes, expression	—	Membranes much separated from each other	—
58	238	Oct.	1, 1884	„	Full dilatation; ruptured by finger	Large bag in front of head	40 minutes, expression	—	Good bag; piece of chorion round rupture retained, and removed by finger	—
59	239	„	1, 1884	3rd and 2nd vertex	Size of a florin; an hour and a half before full dilatation	—	30 minutes, expression	—	Both membranes much split, almost entirely separate; large piece of chorion separate and removed by fingers	Both membranes very thin and rotten
60	241	„	3, 1884	1st vertex	Full dilatation; ruptured by finger	Large piece of both membranes came away before head	20 minutes, expression	—	Amnion separated from about one half of chorion; membranes much torn	—
61	244	„	7, 1884	„	At the beginning of labour	One	1 hour, expression	—	Amnion separated from greater part of chorion and placenta	—
62	249	„	10, 1884	2nd position ?	Full dilatation; ruptured by finger	Large bag in front of head	15 minutes, expression	—	Amnion separated from chorion; 3 in. round hole in bag	—
63	253	„	14, 1884	2nd vertex	2½ hours before full dilatation; os not larger than florin	—	35 minutes, expression	—	Amnion separated from chorion for 4 or 5 in. round hole in membranes	—
64	258	„	16, 1884	Face, left mento-posterior	7½ hours before beginning of labour	—	35 minutes, spontaneously	—	Amnion separated from about half of chorion	—
65	261	„	19, 1884	Breech, right dorso-posterior	Nearly full dilatation	Large bag in front of head	Three quarters of an hour, expression	—	Chorion separated from amnion for some distance round hole in membranes	—

No.	Hosp. No.	Date of admission.	Presentation.	Time of rupture of membranes and size of os tincæ.	Prolapse of bag before delivery.	Duration of third stage and mode of delivery of placenta.	Prolapse of membranes after delivery.	State of placenta and membranes.	Remarks.
66	267	Oct. 28, 1884	1st vertex	Size of crown piece; ruptured by finger	—	30 minutes, expression	—	Piece of chorion 6 × 6 in. retained, and removed from cervix by fingers	Post-partum hæmorrhage, ceased on removal of chorion.
67	268	„ 29, 1884	„	Size of florin; spontaneously	Large bag in front of head	25 minutes, spontaneously	—	Amnion separated for 6 in. round hole in membranes	—
68	269	„ 31, 1884	2nd vertex	3 hours before full dilatation; before admission	—	25 minutes, expression	—	Chorion separated immediately round rupture; three shreds passed on second day	—
69	272	Nov. 1, 1884	1st vertex	Os tincæ size of sixpence; 6 hours before full dilatation	—	10 minutes	—	Amnion separated from one half of chorion and one third of placenta; ring of chorion with hole almost separated from the rest	—
70	276	„ 4, 1884	„	Size of crown piece; ruptured by finger	—	Quarter of an hour; expression	—	Amnion separated from one third of chorion and placenta	—
71	282	„ 8, 1884	„	Full dilatation; ruptured by finger	Large bag in front of head	20 minutes, expression	—	Amnion separated almost entirely from chorion and placenta	—
72	285	„ 14, 1884	3rd and 2nd vertex	Size of florin; ruptured by finger	—	20 minutes, expression	—	Band of chorion, 4 × 4 in., entirely separated from edge of hole in membranes	—
73	291	„ 23, 1884	1st vertex	Size of crown piece; ruptured by finger	—	20 minutes, expression	—	Two pieces of chorion torn from edge of hole in membranes	—
74	298	„ 27, 1884	„	Size of shilling; an hour before full dilatation	—	20 minutes, expression	—	Amnion separated from chorion round hole in membranes	—
75	300	Dec. 2, 1884	„	Size of crown piece; ruptured by	—	40 minutes, expression	—	Amnion separated from half of placenta; small portion	—

					finger				of chorion entirely separated and lost	
76	305	„	6, 1884	„	Size of crown piece; spontaneous	Large bag in front of head	30 minutes, expression	—	Amnion separated from most of chorion and placenta	Macerated 8 months fœtus.
77	306	„	6, 1884	Breech and one arm	—	—	Adherent, and removed by hand	—	About half the bag missing	Accidental hæmorrhage at 5 months; labour induced at 6 months.
78	309	„	8, 1884	1st vertex	Size of crown piece; ruptured by finger	Large bag in front of head	10 minutes, expression	—	Amnion separated from one fourth of chorion	—
79	311	„	11, 1884	3rd and 2nd vertex	Size of florin; spontaneously	—	15 minutes, expression	—	Amnion separated round hole in membranes to a small extent	—
80	313	„	15, 1884	1st vertex	Full dilatation; ruptured by finger	Very large bag in front of head	15 minutes, expression	—	Amnion separated from greater portion of chorion and placenta	—
81	316	„	18, 1884	3rd and 2nd vertex	Nearly full dilatation; ruptured by finger	Large bag in front of head	55 minutes, traction on cord	—	Amnion separated for 4 in. round hole in membranes	Fundus uteri apparently adherent, expression impossible.
82	318	„	18, 1884	1st vertex	Size of crown piece; spontaneously	Large bag in front of head	25 minutes, expression	—	Amnion separated for 10 in. round hole in membranes	—
83	319	„	19, 1884	2nd vertex	Full dilatation; ruptured by finger	Large bag protruded from vulva	20 minutes, expression	—	Amnion separated from much of placenta and chorion	—
84	320	„	21, 1884	„	Size of crown piece; 35 minutes before full dilatation; ruptured by finger	Large bag in front of head	40 minutes, expression	—	Bag much split, possibly part of chorion missing	—
85	321	„	22, 1884	3rd and 2nd vertex	At beginning of labour, but membranes covered the head	—	15 minutes, expression	—	Amnion stripped up round cord	—

No.	PRIVATE PRACTICE. Date of confinement and reference.	Presentation.	Time of rupture of membranes and size of os tincæ.	Prolapse of bag before delivery.	Duration of third stage and mode of delivery of placenta.	Prolapse of membranes after delivery.	State of placenta and membranes.	Remarks.
86	Nov. 11, 1882, A. 87	1st vertex	Three quarters of an hour before birth of child	—	Expression	Amnion followed child beyond vulva	Whole of chorion retained; amnion stripped up to insertion of cord; removed by hand	Mother syphilitic; membranes felt tough and thick before rupture; chorion thick and tightly adherent to uterus.
87	Aug. 14, 1883, A. 79	„	Full dilatation; ruptured by finger	Membranes protruded like finger of glove when os tincæ was size of a shilling	10 minutes, expression	„	Amnion stripped up to cord	Membranes felt soft like amnion alone.
88	May 10, 1884, A. 115	„	Full dilatation	Large smooth bag projected from vulva, head being on perineum	10 minutes, expression	—	Two distinct bags; amnion stripped up to cord	—
89	Dec. 21, 1883, A. 95	2nd vertex	Full dilatation; ruptured by finger	Membranes protruding from vulva like a sausage	15 minutes, expression	—	Two complete bags; amnion stripped up to cord	—
90	May 30, 1885, B. 14	1st vertex	At beginning of labour	—	30 minutes, expression	—	Amnion separated from half chorion and half placenta	—

NOTE ON THE RELATION BETWEEN THE IMPLANTATION OF THE PLACENTA AND THE INSERTION OF THE CORD.

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In his work, 'Accouchemens Laborieux' (suite p. 110, *et seq.*), no less an authority than Levret makes the following statements:—That the insertion of the umbilical cord into the placenta varies as the insertion of the placenta on the uterine wall. If the placenta is central the cord is centrally inserted; if the placenta is excentrically planted the cord is inserted nearer to the lower edge; if the placenta approaches the lower uterine orifice the cord is inserted to its edge ("battledore placenta") and, indeed, to its lower edge.

This is given without corroborative facts, as an *ipse dixit* of Levret; but it still survives though more than 130 years old, and has even (at least in part) been endorsed by the writers of some of our most recent books.

Under these circumstances I have thought it worth while to put the matter to the test. If it should prove true, it is so remarkable a fact that it should be accounted for; if it is false, the sooner it is relegated to the proper place for unauthorised statements and *ipse dixits* the better.

The following analysis of 188 cases treated in the General Lying-in Hospital is offered as a solution of the question. The patients number 188, but as one of them bore twins the number of placentæ is 189.

The table contains the class of insertion of the cord, states whether its insertion was up or down, gives the

measures from which this is derived. The two next columns give the position of the placenta in the uterus; the two last columns give the position of the insertion of the cord in the uterus.

It will be seen that there is no order or proportion apparent in any of these relations.

As regards the position of the cord:

Insertion of cord.	Direction of point of insertion.			
	Up.	Down.	Midway.	Not noted
Central . .	17	18	17	4
Lateral . .	46	54	16	1
Marginal . .	7	5	0	—
Velamentous .	1	1	2	—
	71	78	85	5

Total 189

Levret's dictum therefore has no foundation in fact.

Insertion of Cord.

No.	Hosp. No.	Date of admission.	Insertion of cord.	Nearest point up or down.	Distance from insertion of cord to lower edge of placenta.	Distance from insertion of cord to upper edge of placenta.	Least distance from edge of placenta to edge of hole in membranes.	Greatest distance from edge of placenta to edge of hole in membranes.	Least distance from insertion of cord to edge of hole in membranes.	Greatest distance from insertion of cord to edge of hole in membranes.
					Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
1	8	Jan. 7, 1884	Lateral	—	3½	3½	11½	11	4½	14½
2	11	„ 11, 1884	„	Down	2	3½	5	10	7	13½
3	12	„ 13, 1884	„	„	2½	5	1	11	3½	16
4	13	„ 13, 1884	„	Up	4	2½	5	12	9	14½
5	14	„ 13, 1884	„	Down	3	4	Membranes very much torn			
6	15	„ 14, 1884	„	Up	3½	2	5	11	8½	13
7	16	„ 17, 1884	Central	—	3	3	1	11	4	14
8	97	May 14, 1884	Lateral	Up	3½	2½	5½	11	9	13½
9	99	„ 17, 1884	Central	—	3½	3½	0	15	3½	18½
10	100	„ 18, 1884	Lateral	Down	3½	3½	0	13	3½	16½
11	101	„ 19, 1884	Central	—	4	4	2	15	6	19
12	102	„ 19, 1884	Lateral	Midway	1¾ (premature)	1¾ (premature)	2	5	3½	6½
13	104	„ 22, 1884	„	Up	4	1½	5	12	9	13½ Twin.
			„	Down	2½	4	0	12	2½	16 Twin.
14	105	„ 22, 1884	„	Up	5	2½	2	12	7	14½
15	106	„ 24, 1884	„	Down	2	5	3	8	8	10
16	107	„ 26, 1884	„	Up	5	2	1	13½	6	15½
17	109	„ 26, 1884	„	Down	1	6	0	10	1	16
18	110	„ 27, 1884	Central	—	3½	3½	7	13	10½	16½
19	111	„ 28, 1884	„	Down	3½	4	Membranes much torn			
20	112	„ 30, 1884	Lateral	„	1½	5½	4	11	5½	16½
21	113	„ 31, 1884	„	„	1	6½	7	9	8	15½
22	114	June 2, 1884	„	Up	3½	3½	1	11	4½	14½
23	115	„ 3, 1884	„	„	3½	3½	3	17	6½	20½
24	116	„ 4, 1884	„	Midway	3½	3½	2½	12	6	15½
25	117	„ 7, 1884	„	Up	4½	3	5½	15	10	18

No.	Hosp. No.	Date of admission.	Insertion of cord.	Nearest point up or down.	Distance from insertion of cord to lower edge of placenta.	Distance from insertion of cord to upper edge of placenta.	Least distance from edge of placenta to edge of hole in membranes.	Greatest distance from edge of placenta to edge of hole in membranes.	Least distance from insertion of cord to edge of hole in membranes.	Greatest distance from insertion of cord to edge of hole in membranes.
					Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
26	118	June 8, 1884	Lateral	Midway	3½	3½	3	14	6½	17½
27	120	„ 10, 1884	„	Down	1½	4	8	11	9½	15
28	121	„ 10, 1884	Central	Up	3½	3	1	12	4½	15
29	122	„ 12, 1884	Lateral	Down	1½	5½	1½	15	3	20½
30	123	„ 13, 1884	Central	Midway	3	3	2	14	5	17
31	124	„ 15, 1884	Lateral	Down	1	4½	3	15	4	19½
32	125	„ 17, 1884	Central	Up	4½	2½	1	13	5½	15½
33	126	„ 18, 1884	Lateral	„	5	2½	0	16	5	18½
34	127	„ 18, 1884	„	„	5	2	5	9	10	11
35	128	„ 19, 1884	Marginal	„	7	0	4	16	11	16
36	129	„ 19, 1884	Central	Down	2½	4½	2	14	4½	18½
37	130	„ 20, 1884	Lateral	Up	5	1½	3	10	8	11½
38	131	„ 21, 1884	Central	Midway	5	5	5	11	10	16
39	132	„ 22, 1884	„	„	3½	3½	4	15	7½	18½
40	134	„ 23, 1884	„	Down	2	4½	3	10	5	14½
41	135	„ 24, 1884	Lateral	Up	2	4	Membranes very much torn			
42	136	„ 27, 1884	„	„	5½	1½	4	12	9½	13½
43	137	„ 28, 1884	Central	„	5	2	1	14	6	16
44	138	„ 29, 1884	Lateral	Down	1	5	2	18	3	23
45	139	„ 29, 1884	„	„	½	6	1	15	1½	21
46	140	„ 30, 1884	Central	„	2½	4	2	15	4½	19
47	141	July 2, 1884	„	Up	4	3	3	14	7	17
48	142	„ 2, 1884	Marginal	„	6½	0	3	14	9½	14
49	143	„ 3, 1884	Lateral	„	5	1	1	16	6	17
50	144	„ 3, 1884	„	„	4½	2	1½	11	6	13
51	145	„ 5, 1884	„	„	4½	1½	4	14	8½	15½
52	146	„ 6, 1884	„	„	4	3	4	14	8	17
53	147	„ 6, 1884	Velamentous	Midway	2½	2½	5	9	7½	11½
54	148	„ 7, 1884	Marginal	Up	7	0	6	14	13	14
55	149	„ 8, 1884	Central	Midway	3½	3½	5	14	8½	17½
56	150	„ 9, 1884	„	Up	3½	2	4½	8	8	10

57	151	"	10, 1884	Lateral	"	Midway	4	2	1	16	3	20
58	152	"	10, 1884	"	Central	"	3	3	5	14	3	17
59	153	"	11, 1884	Central	"	Up	4	4	5½	17	3½	21
60	154	"	11, 1884	"	"	Down	4	3	4	8	3½	11
61	155	"	11, 1884	"	"	Midway	3	4	2	12	3	16
62	156	"	11, 1884	Lateral	"	Down	3	3	6	15	3	18
63	157	"	12, 1884	"	Central	"	1½	4½	1	17	4½	21½
64	158	"	13, 1884	Central	"	"	2½	3½	—	—	5	—
65	159	"	15, 1884	Lateral	"	Midway	3½	3½	1½	13	—	16½
66	160	"	15, 1884	"	"	Up?	6?	4?	2?	12?	5?	17?
67	161	"	18, 1884	"	"	Down	1	5	3	14	3	21
68	162	"	18, 1884	Marginal	"	"	0	7	4	15	3	18½
69	163	"	19, 1884	Lateral	"	Up	4	3½	6	14	3	17
70	164	"	20, 1884	"	Central	"	3½	3	2	17	3½	20½
71	166	"	23, 1884	"	Lateral	"	3½	3½	0	14	4	16
72	167	"	24, 1884	Central	"	Midway	4½	2	4	14	4	20½
73	169	"	26, 1884	Lateral	Marginal	Up	0	6½	4	14	4	18
74	170	"	27, 1884	Marginal	Lateral	Down	4½	2	5½	11	5	16
75	172	"	30, 1884	Lateral	Central	Up	2½	4	0	12	4	16
76	173	"	30, 1884	Central	Lateral	Down	1½	4½	1	10	4	14½
77	174	Aug.	2, 1884	Lateral	Central	"	2½	3	2	16	3	19
78	175	"	5, 1884	Central	Lateral	Up	4	3	3	13	4	17
79	176	"	5, 1884	Lateral	Central	"	4	3	5	13	4	17
80	177	"	5, 1884	Central	Lateral	Down	1½	4	4	14	4	18
81	179	"	7, 1884	Lateral	"	Up	6	2	1	10	2	12
82	180	"	8, 1884	"	"	Down	2	5	3	13	5	18
83	181	"	8, 1884	"	"	Up	2½	4½	4	10	2½	12½
84	182	"	9, 1884	"	"	"	6	1	4	10	1	11
85	183	"	9, 1884	Central	"	Midway	4	4	3	16	4	20
86	184	"	9, 1884	"	"	"	3½	3½	3	14	3½	17½
87	185	"	10, 1884	"	"	Up	4	3	2	10	3	13
88	186	"	10, 1884	"	"	"	4	2	5	14	2	16
89	187	"	10, 1884	Lateral	"	"	1½	5½	3	11	5	16
90	188	"	11, 1884	Central	"	Down	3	4	3	13½	4	17½
91	189	"	12, 1884	Lateral	"	"	1½	4½	3	13	4½	17½
92	190	"	13, 1884	Central	"	Midway	3½	3½	3	10	4½	18½
93	191	"	13, 1884	Lateral	"	Down	2	5	3	13	5	18
94	192	"	15, 1884	"	"	Up	4	3	1	12	3	15
95	193	"	15, 1884	Central	"	"	4	3	3	16	3	19

No.	Hosp. No.	Date of admission.	Insertion of cord.	Nearest point up or down.	Distance from insertion of cord to lower edge of placenta.	Distance from insertion of cord to upper edge of placenta.	Least distance from edge of placenta to edge of hole in membranes.	Greatest distance from edge of placenta to edge of hole in membranes.	Least distance from insertion of cord to edge of hole in membranes.	Greatest distance from insertion of cord to edge of hole in membranes.
					Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
96	194	Aug. 22, 1884	Lateral	Up	5	1	0	12	5	13
97	195	„ 23, 1884	Central	Down	2	4	2	13	4	17
98	196	„ 23, 1884	„	„	3½	4	4	19	7½	23
99	197	„ 24, 1884	„	Up	4	3	3	16	7	19
100	198	„ 25, 1884	Lateral	„	4	3	6	12	10	15
101	199	„ 25, 1884	Central	Down	3	4	2	13	5	17
102	201	„ 26, 1884	Lateral	„	3	3½	2	14	5	17½
103	202	„ 27, 1884	Central	Midway	3	3	4	9	7	12
104	203	„ 28, 1884	„	„	3½	3½	4	12	7½	15½
105	204	„ 28, 1884	Lateral	„	3½	3½	4	14½	7½	18
106	205	„ 30, 1884	Central	Up	3½	3	3	15	6½	18
107	206	„ 30, 1884	„	Down	3	4	3	15	6	19
108	208	Sept. 1, 1884	Lateral	„	3	5	5	14	8	19
109	209	„ 2, 1884	Central	„	2½	4	7	12	9½	16
110	211	„ 6, 1884	Lateral	„	2	5½	3	14	5½	19½
111	212	„ 6, 1884	Vela-mentous	Up	8½	1½ (beyond)	3	12	11½	10½
112	214	„ 7, 1884	Lateral	„	5	1	2	10	7	11
113	216	„ 8, 1884	„	„	7	1	Membranes very much torn.			
114	218	„ 8, 1884	Central	„	4	3	3	? torn	7	? torn
115	236	„ 29, 1884	Lateral	Midway	3½	3½	4	10	7½	13½
116	237	„ 30, 1884	Central	Up	4½	2½	3	14	12½	16½
117	238	Oct. 1, 1884	„	Midway	4	4	2	13	6	17
118	240	„ 2, 1884	Lateral	„	3½	3½	5	16	8½	19½
119	242	„ 5, 1884	„	Down	1	5	5	14	6	19
120	243	„ 5, 1884	„	Up	3½	3	1	15	4½	18
121	244	„ 7, 1884	Central	Midway	3½	3½	6	16	9½	19½
122	245	„ 8, 1884	„	„	3½	3½	4	15	7½	18½
123	247	„ 9, 1884	Vela-mentous	Midway	3½	3½	3	16	6½	19½
124	248	„ 9, 1884	Lateral	Up	4½	1½	1½	13	6	14½
125	249	„ 10, 1884	„	„	2	4½	6	14	10½	16

126	250	„	10, 1884	„	Midway	4	4	2	16	6	20
127	251	„	10, 1884	Marginal	Up	6	0	3	22	9	22
128	252	„	13, 1884	Lateral	Down	3	4	3	16	6	20
129	253	„	14, 1884	„	„	1½	5	5	16	6½	21
130	254	„	14, 1884	„	„	2	4½	8	14	10	18½
131	255	„	16, 1884	„	Up	3½	2½	6	19	9½	21½
132	256	„	16, 1884	„	Down	2½	5	5	14½	7½	19½
133	257	„	16, 1884	Central	„	2	4½	2½	15	4½	19½
134	259	„	18, 1884	Lateral	„	2	4½	3½	20	5½	24½
135	260	„	18, 1884	„	„	3	3½	4	19	7	22½
136	261	„	19, 1884	„	„	1½	4½	4	17	5½	21½
137	262	„	20, 1884	„	Up	3	4	4	17	8	20
138	263	„	24, 1884	Central	„	4	3	0	18	4	21
139	264	„	27, 1884	„	Down	3	3½	4½	12	7½	15½
140	265	„	27, 1884	Lateral	„	3½	4½	3	16	6½	20½
141	266	„	28, 1884	„	„	1	4½	2	19	3	21½
142	267	„	28, 1884	Central	„	3	5	6	? torn	9	? torn
143	268	„	29, 1884	Lateral	Midway	3½	3½	3	14	6½	17½
144	269	„	31, 1884	Marginal	Down	0	7	5½	12	5½	19
145	270	„	31, 1884	„	„	0	6	3	19	3	25
146	271	„	31, 1884	Lateral	Up	5	1	0	14	5	15
147	272	Nov.	1, 1884	„	Down	1½	5	Membranes very much torn			
148	274	„	3, 1884	Marginal	„	0	6	5	18	5	24
149	275	„	4, 1884	Lateral	„	2	5	4	17	6	22
150	276	„	4, 1884	„	„	3	4½	0	15	3	19
151	277	„	6, 1884	Central	Up	3½	3	5	17	8½	20
152	278	„	7, 1884	Lateral	Down	3	4	6	14	9	17
153	279	„	8, 1884	Vela-mentous	„	0	7	7	12	7	19
154	280	„	8, 1884	Lateral	„	2	4½	6	13	8	17½
155	282	„	8, 1884	„	Up	5	1½	1½	19	6½	20½
156	283	„	10, 1884	„	„	5	1	1	17	6	22
157	284	„	12, 1884	„	„	4	3	Membranes very much torn			
158	285	„	14, 1884	„	„	4	3	4	16	8	19
159	286	„	15, 1884	„	Down	5	2	4	14½	9	16½
160	287	„	15, 1884	„	Up	4	3	6	13	11	16
161	288	„	16, 1884	„	Midway	3½	3½	7	11	10½	14½
162	289	„	21, 1884	„	Down	3	4	7	15	10	19
163	290	„	22, 1884	„	Up	6	2	7	16	13	18

No.	Hosp. No.	Date of admission.	Insertion of cord.	Nearest point up or down.	Distance from insertion of cord to lower edge of placenta.	Distance from insertion of cord to upper edge of placenta.	Least distance from edge of placenta to edge of hole in membranes.	Greatest distance from edge of placenta to edge of hole in membranes.	Least distance from insertion of cord to edge of hole in membranes.	Greatest distance from insertion of cord to edge of hole in membranes.
					Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
164	292	Nov. 24, 1884	Lateral	Midway	3½	3½	4	16	7½	19½
165	294	„ 25, 1884	„	Up	3½	2½	6	16	9½	18½
166	295	„ 26, 1884	„	Down	2½	3½	3½	13	6	15½
167	296	„ 27, 1884	„	„	3	4	2	24	5	28
168	297	„ 27, 1884	„	Midway	3½	3½	7	16	10½	19½
169	298	„ 27, 1884	„	Down	2½	5	8	13	10½	18
170	299	„ 29, 1884	„	„	3	4	5	18	8	22
171	300	Dec. 2, 1884	Central	Midway	3½	3½	7	17	10½	20½
172	301	„ 3, 1884	Lateral	Down	3	4	7	14	10	18
173	302	„ 2, 1884	„	„	3	4	5	15	8	19
174	303	„ 4, 1884	„	„	1	5	9	15	10	20
175	304	„ 4, 1884	„	Up	5	2½	3	15	8	20
176	307	„ 8, 1884	„	Down	3	4	6	20	9	24
177	308	„ 8, 1884	„	„	2½	3½	4	20	6½	23½
178	309	„ 8, 1884	„	Up	5	2	1	15	6	17
179	310	„ 8, 1884	„	Midway	3	3	5	16	8	19
180	311	„ 11, 1884	„	Down	3	4	7	16	10	20
181	312	„ 14, 1884	Central	Midway	3½	3½	7	10	10½	13½
182	313	„ 15, 1884	Marginal	Up	8	0	3	16	11	16
183	314	„ 17, 1884	Lateral	Down	1	5	10	14	11	19
184	315	„ 17, 1884	Central	Midway	3½	3½	6	14	9½	17½
185	316	„ 18, 1884	Lateral	Down	3	4	5	17	8	21
186	317	„ 18, 1884	„	Up	5	1	7	11	12	12
187	318	„ 18, 1884	Central	Down	2½	3½	4	18	6½	21½
188	321	„ 22, 1884	Lateral	Midway	3½	3½	4	13	7½	16½

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ADJOURNED DISCUSSION ON DR. CHAMPNEYS' THREE LAST PAPERS ON THE MECHANISM OF THE THIRD STAGE OF LABOUR, VIZ.

3. The Separation and Expulsion of the Membrane (p. 264).

4. Some Causes of Retention of the Membranes (p. 317).

5. Note on the Relation between the Implantation of the Placenta and the Insertion of the Cord (p. 337).

Dr. Matthews Duncan valued highly the series of papers which Dr. Champneys had laid before the Society. He would have preferred, as bearing a truer meaning, protrusion or expression of the membranes, to prolapse. He was not inclined to adopt any rule of interference by rupturing the membranes at a certain stage of the dilatation of the external os, regarding all kinds of interference as undesirable except when distinctly called for. He did not regard the site of rupture of the membranes as a sufficient basis for a statement of the height of the placental insertion on the uterine wall. Dr. Champneys had, he thought, disproved Levret's dictum as to insertion of the cord.

Dr. Champneys, in reply to the President, said that by "lateness" of rupture of the bag of membranes he referred not so much to time as to the occurrence of rupture at the proper point in the process. If the advance of the bag of membranes continued after the bag was hemispherical its dilating power ceased, and it would advance; but it could not advance without rupture of the chorion, and, if this took place, the amnion advanced alone, and peeled itself off the chorion, which under such circumstances, was often left behind. The separation of the membranes from the lower uterine segment was

frequently imperfect, and insufficient to obviate this defect.

In answer to Dr. Matthews Duncan, he would say that the word "prolapse" of the bag, which he had criticised, was an exact translation of the technical German word for this occurrence, viz. "Vorfall der Fruchtblase," and that he had thought it best to make use of a word already understood in a technical sense. He had, in the paper, made use of the German term in brackets to avoid all mistakes.

As to the advisability of leaving the rupture of the bag of membranes to nature, that doubtless applied to all conditions as long as they were proceeding naturally, but if the advance of the bag beyond the proper distance is unnatural, and leads to retention of the chorion, as it does, then the principle did not seem to him to apply.

The argument from the "Gassengeburten" or "street deliveries" used by Dr. Duncan seems open to a fallacy. If it were indeed safer for a woman to have no attendance, our duty would be to leave her alone and not come near her. But really these are cases, generally, of vigorous healthy women, whose labours are over before they can get to the hospital, and are therefore, in this sense, selected cases. The whole blame of less favourable results cannot therefore rest on the accoucheur's fingers or the hospital air.

The source of error as to the position of the placenta mentioned by Dr. Duncan had been expressly stated in the paper, but the method adopted, if not infallible, was the best which we possess. Moreover, it seemed quite unlikely that the errors in a large number would be sufficient to invalidate general conclusions, if harmonious.

He begged to thank the Society for the attention which they had paid to his series of papers.

OCTOBER 5TH, 1887.

W. F. CLEVELAND, M.D., Vice-President, in the Chair.

Present—32 Fellows and 2 Visitors.

Books were presented by Dr. Champneys, Mr. Alban Doran, the Council of University College, the Smithsonian Institution, and the Société des Sciences Médicales de Lyon.

John Adam Watson, L.R.C.P. and S.Ed. was admitted a Fellow of the Society.

Murdoch Cameron, M.D. (Glasgow); Lansdown Murray Guilding, M.A., M.B.Oxon (Reading); John Hackney, M.D.St. And. (Hythe); O. E. Bulwer Marsh, L.R.C.P.Ed. (Newport, Mon.); H. Shapter Robinson, L.R.C.P.Ed. (Sunderland); Thomas Tinley, M.D. (Whitby); and Arthur Henry Mason, L.R.C.P.Lond. (Walton-on-Thames), were declared admitted.

Herbert C. Rowbotham, M.R.C.S. (Derby); and Albert Primrose Wells, M.A.Cantab., L.R.C.P. and S.Ed., L.M. (Douglas, Isle of Man), were elected Fellows of the Society.

The following gentlemen were proposed for election:—Henry Frederick Bailey, M.R.C.S. (Lee); Oswald Baker, Surgeon-Major Indian Army, L.R.C.P. and S.Ed., L.M.; William Case, M.R.C.S.; A. D. Leith Napier, M.D.Aber.; R. Alexander Shannon, L.R.C.P.Ed. (St. Mary Cray);

William Edmund Thomas, L.R.C.P. and S.Ed. (Bridgend); and Charles Robert Williams, M.B. C.M.Ed. (Ashby de la Zouch).

FIBRO-CYSTIC TUMOUR OF UTERUS.

By A. C. Butler-Smythe.

Mr. Butler-Smythe showed a fibro-cystic tumour of the uterus, together with the uterus and ovaries, removed the same day at the Grosvenor Hospital from a patient aged 46. The tumour, which weighed over 30 lbs., had grown rapidly, and had caused very grave symptoms of late. The operation was extremely difficult, owing to deep pelvic adhesions.

[The patient died October 8th.]

Reply of the Home Secretary to the Address of the Obstetrical Society.

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Whitehall;
6th July, 1887.

Sir,—I have had the honor to lay before the Queen the loyal and dutiful Address of the President, Council, and Fellows of the Obstetrical Society, London, on the occasion of Her Majesty attaining the fiftieth year of her reign; and I have to inform you that Her Majesty was pleased to receive the same very graciously.

I have the honor to be, sir,
Your obedient servant,
Henry Matthews.

The Hon. Secretary, Obstetrical Society's Library,
54, Berners Street, Oxford Street, W.

WHAT ARE THE CHIEF FACTORS WHICH DETERMINE THE DIFFERENCES WHICH EXIST IN THE FORM OF THE MALE AND FEMALE PELVES?

By W. Arbuthnot Lane, M.S., F.R.C.S.

Communicated by Dr. GALABIN.

(Received February 2nd, 1887.)

(*Abstract.*)

The writer disputes the various theories which are at present put forward on this subject. He criticises the supposition that many if not all of the differences which exist in the form of the male and female pelves are due to force exerted by the femora and sacrum upon the innominate bones.

He considers that the conditions of the thorax and pelvis are exactly analogous in the two sexes. He describes in detail the manner in which the female thorax differs as a whole and in its constituent parts from the male thorax, and he thinks that the factor which determines the altered form of the female thorax from the male thorax (which he regards as the original type) is the additional function performed by the former, namely, that of accommodating the fœtus during the later months of pregnancy. In the case of the pelvis, that of the female performs one function in addition to those performed by the male pelvis. That additional function is the support and transmission of the fœtus, and he regards this as the sole factor which determines the variations in form in the two sexes.

He thinks that there is a fallacy in arguing from the manner in which certain forces produce changes in the pelves of diseased female subjects during the lifetime of a single individual, that the same forces acting upon a healthy female subject determine this peculiarity in the form of the pelvis, and that, should these

forces be absent, the characteristic peculiarities do not result. He attempts to prove this point by applying the same argument to the analogous condition of the female thorax.

He discusses the two most common variations in the form of the male pelvis and their probable causes. He shows that these variations do not occur in the female subject, and he considers that the pressure exerted by the fœtus, represented as a developmental factor, is the cause which prevents the occurrence of such variations in the female subject.

He also refers to the condition of asymmetry of the costal cartilages and sternal pleurostea, which is normal in the ape, and to the occasional occurrence of such a condition in the human subject.

He attempts to explain the causation of this asymmetry in both cases, and to prove that the tendency to produce a certain result in the parent results in its actuality in the offspring.

He then alludes to pressure changes due to carrying loads upon or in front of the trunk, and from premises gathered from these several points he comes to the conclusion that the sole determining factor of the variations in the form of the male and female pelves is, as in the case of the thorax, the force or pressure exerted both directly and indirectly by the fœtus.

I HAVE read the works of several very eminent obstetric authors[1] upon the mechanical development of the female pelvis, in which they attribute its peculiar form chiefly to the forces exerted upon the ilium by the sacrum and femora during the lifetime of the individual, and in which they attempt to prove their point by an analysis of the changes in form which the diseased pelvis undergoes under the influence of the same forces.

After carefully considering their arguments, it appeared to me that they had laid too much stress upon the manner in which the above forces determine the peculiarities in the form of the female pelvis, that they had not availed themselves of the consideration of the causation of analogous variations in form of the remainder of the female skeleton, that they were wrong, when from the influence

[1] 'Researches in Obstetrics,' J. Matthews Duncan.

of the same forces in the production of deformed pelves, the alteration in whose form had been developed during the lifetime of the individual, they argued that the form of the normal female pelvis depended upon the same factors, and that they did not attribute sufficient importance to the mechanical influence exerted by the fœtus, both while it remained in the abdomen and in its passage through the true pelvis.

In this paper I hope to show that the sole cause of the deviation in the form of the female pelvis from that of the male is the mechanical influence exerted by the fœtus during the time it remains in the abdomen and during its transit into the outer world, and that the characteristic differences are not the result of force transmitted through it in the manner referred to above. When I say that the alteration in form of the female pelvis is due to the mechanical influence exerted by the presence of the fœtus, it is obvious that I do not refer solely to the influence it exerts during the lifetime of a single individual, but that I think the pressure exerted directly and indirectly by the fœtus must be regarded as the sole mechanical developmental or evolutionary factor in its production, and that the form of the female pelvis has been gradually altered during the progressive development of the human race by the increasing size of the fœtal brain and head, as well as by the changing attitudes and habits of the individuals.

It is only necessary to compare the pelvis of the human female with that of the higher ape in order to satisfy oneself of the important influence exerted by the differences in the habitual attitudes and in the form of the head of the fœtus. Also in asserting that the peculiarities in character of the female pelvis are not produced by the transmission of superjacent pressure, I do not mean that the male and female pelvis do not depend on this factor to a considerable extent for the characters, which are common to both, but that the differences which exist are not the result of it, but instead are due to the mechanical pressure exerted indirectly through this

mechanism by the fœtus, as well as directly upon the skeleton of the trunk.

I think I can best prove my point by arguing by analogy. In the 'Guy's Hospital Reports' for 1886, I showed that the bony and cartilaginous framework of the female pelvis differed in a very marked manner from the condition present in the male subject, and I demonstrated, to my own satisfaction at least, that the alteration in the form of the thorax depend solely on the purely mechanical influence exerted by the pressure of the fœtus when in the abdomen, this pressure having acted upon an innumerable succession of individuals.

In the thorax in both sexes we have a strong bony framework, performing a common function, namely, that of enclosing and supporting the contained viscera, and of transmitting to the spinal column pressure exerted upon it by the shoulder girdles.

In the case of the woman the thorax is exposed to another and very important influence, namely, the necessity of accommodating to a considerable extent the fœtus during the later months of pregnancy.

We will briefly examine the differences in the form of the thorax and of its constituent parts in the two sexes.

In the female subject the sternum is both absolutely and relatively shorter than it is in the male.

I found that in two male subjects taken at random in which the interval between the upper margin of the manubrium and the lower margin of the symphysis measured about twenty-four inches, the sternum in one was seven and three quarters and in the other eight and a quarter inches long, and in two female subjects in which the trunk measurement was almost exactly twenty four inches the sternum measured five and a half and six and a half inches. In the female subject the manubrium is relatively longer than it is in the male, and the gladiolus is relatively shorter. As a consequence, the upper two intercostal spaces are relatively broader than in the male subject, and the lower spaces are relatively narrower.

This is most marked at the anterior portion of each space.

In the female subject it is by no means uncommon to find only six costal cartilages articulating with the sternum, while in the male there are almost invariably seven so-called true costal cartilages, and frequently eight.

Therefore, in the human subject the margin of the thorax formed by the cartilages of the lower ribs is very oblique in direction, and the angle which exists between these margins in the middle line is very acute as compared with that in the male, in fact, in some subjects the inner margin of the thorax in the female is nearly vertical for a considerable portion of its extent.

In the female subject a considerable proportion of the thorax lies below the level of the lower extremity of the gladiolus. If a cord be made to encircle the thorax at this level it will be found that in the axillary line there exists an interval of six and a half or seven inches between the cord and the lower margin of the thorax. In the male subject this measurement is usually much smaller, both absolutely and relatively. The costal cartilages in the female subject are more elastic and pliant than in the male.

In the female, by compressing laterally the lower portion of the thorax, its opposing inner margins may be easily approximated, and will overlap one another, and in a reverse manner these lateral flaps may be separated from one another so as to increase very considerably the angle between them in the middle line. The mobility of the lower part of the chest in a lateral direction is very slight in the male subject. I believe that a very large number of the fissures which are produced in the living female subject as the result of tight lacing are due to the pressure consequent upon the overlapping of the free margins of the thorax, and not by the ribs, as is sometimes supposed. The calibre of the upper portion of the chest is relatively much larger and more variable in the female than it is in the male, and it is this variation in the form of the

chest, aided by the presence of the breast in the female subject, which gives the peculiarities to the types of respiration in the two sexes, namely, the superior costal and inferior costal varieties.

It must be quite obvious from the consideration of the above details, that the differences which exist in the form of the male and female thorax are due to the mechanical pressure exerted upon the thorax by the fœtus during the later months of pregnancy. Besides performing functions identical with those performed by the male thorax, the female thorax has an additional purpose to serve, namely, that of accommodating a fœtus. The form of the female thorax is remarkably suited to perform this additional purpose in such a manner as not to prejudice its capacity for carrying out the functions common to the thorax of both sexes. The lower portions of the thorax are separated very readily and to a very considerable extent by the gradually increasing mass in the abdomen, and as the upper part of the chest is large and capable of much greater variations in size than is the corresponding part of the male thorax during the movements of inspiration and expiration, the respiratory capacity of the individual is hampered in a manner which is comparatively trivial when one considers the extent to which the lower part of the thorax is encroached upon, and rendered practically functionless as regards respiration by the presence of the fœtus. The same amount of pressure applied in a similar manner to the male thorax might possibly be disastrous in its results.

Having proved this point so far, let us consider whether we should be right in attempting to show by an analysis of the changes in form which the female thorax frequently undergoes as the result of disease of its constituent parts, contents, or appendages, that the differences which exist in the form of the male and female thorax are due to the mechanical influence of the same factors, for this is practically the argument which many obstetric writers apply to the female pelvis.

I think that it is quite obvious that the conditions of the thorax which follow an amputation of an upper extremity, that the thoracic and spinal changes which ensue in the various forms of labour which I have described, and that the condition of the thorax in mollities, rickets, lateral curvature, angular curvature, phthisis, and empyema, will not help us to explain the reason why the form of the female thorax differs from the form of the male, though they demonstrate clearly the causes which determine the development of the characters common to the thorax of both sexes.

If we now proceed to analyse the differences which exist between the form of the remainder of the skeleton of the trunk in the male and female subject, we see that, as in the case of the thorax, this portion of the skeleton performs a common function in both sexes, and in the female it serves an additional purpose, namely, that of accommodating and transmitting the fœtus. Therefore the characters in which the female skeleton here differs from the corresponding portion of the male are due to a developmental factor, namely, the hereditary transmission of the pressure exerted by the fœtus upon its several component parts, and to the alteration of the position of the centre of gravity of the trunk owing to the presence of a mass in front of the column. For the same reasons, in the female the interval between the sternum and symphysis pubis is often absolutely and always relatively larger than in the male; the iliac fossæ are also more expanded and more suited to support the fœtus than are the corresponding parts in the male; the lumbar column is less convex, the lumbo-sacral angle less prominent, the upper part of the anterior surface of the sacrum less concave, the transverse diameter of the brim of the true pelvis with its circumference is greater, the true pelvis is shallower, the sacro-iliac synchondrosis is less deep, and the subpubic angle is greater than in the male. Some of the conditions of variation mentioned are so obviously the result of direct pressure that we need not delay to consider

them. They are the increase in the capacity of the female abdomen, the expanded condition of the iliac fossæ, the greater calibre and smaller depth of the true pelvis, and the greater size of the subpubic angle. The characteristic points which we will consider in detail are the conditions of the lumbar spine, the sacro-vertebral angle, the form of the sacrum, and the condition of the symphysis pubis and sacro-iliac synchondrosis.

The male pelvis may be regarded as the typical form of the pelvis, since that of the female is modified to perform functions in addition to those performed by the male. If we examine the male pelvis in vertical median section, we find that the anterior surface of the upper half of the sacrum is markedly concave, and that the posterior surface is correspondingly convex; also that the direction of the plane of the facet on its upper surface when prolonged forwards passes an inch to an inch and a half above the symphysis pubis. The articular surfaces on the upper articular processes of the sacrum have a direction backwards as well as inwards.

From this usual condition of the sacrum, &c., we have a variation in one of two directions. The last lumbar vertebra may form the first piece of the sacrum, or the first piece of the sacrum may be formed by the normal second sacral vertebra, the dissociated first sacral vertebra displaying all the characters of the normal last lumbar.

We may explain the first of these conditions in one of three possible ways:—Firstly, as a retrocession or casting back to the condition which is not uncommon among the higher apes; secondly, we may consider it not impossible that the progenitors of this individual had not yet lost this simian character, that this succession of individuals was therefore behind the vast majority of the human race as regards this point in their development, and that they present a gradual change in type as still going on in the human species; and thirdly, it is, I think, not unreasonable to assume that this fusion of the last lumbar vertebra and sacrum is the developmental result of accessory forces

acting upon successions of this individual's progenitors in such a manner as to cause or tend to cause fusion of these two bones during the lifetime of a single individual, the transmission of a tendency by the parent resulting in its actuality in the offspring. We have only to imagine that his father, grandfather, and perhaps earlier antecedents, were employed as coal-heavers, or in some similar pursuit, and then to allow the possibility of the transmission of the tendency to fusion resulting in its existence, and the case is proved. In such a pelvis the plane of the facet on the upper surface of the first piece of the sacrum has a direction which crosses the symphysis at a greater interval than in the normal subject, while the direction of the upper surface of the true first sacral vertebra is depressed below the normal. The lumbar curve is less convex than in the normal subject.

As regards the second of the variations mentioned, namely, that of dissociation of the first sacral vertebra to form a typical last lumbar vertebra, it is, I think, explicable by the third argument alone which I have just used, namely, the transmission of an acquired tendency. We must, therefore, suppose that a succession of a doubtful number of this individual's progenitors had been habitually exposed to influences which, by causing a backward displacement from the normal position of the centre of gravity of the superjacent trunk, tended to reverse the concavity of the anterior surface of the sacrum and the convexity of its posterior surface during the lifetime of each individual, and consequently to diminish the forward projection of the upper border of the sacrum or the promontory, and to lessen the convexity of the lumbar curve. Such forces would also tend to cause the spinous process to increase in size and thickness, and the bodies of the sacral vertebræ to diminish in a corresponding proportion.

I would refer to fig. 1, pl. v, in my paper in the 'Guy's Hospital Reports,' for an excellent example of the condition above described. It is the first instance of displacement

backwards of the last lumbar vertebra that has been figured or described.

I would also call attention to the alteration in the direction of the articulating surfaces on the articular processes of the sacrum and lower lumbar vertebræ which takes place in such cases, these looking directly inwards and outwards alone, to the slight change in the direction of the plane of the upper surface of the sacrum in such a way that a greater interval than normal exists between its prolongation and the upper margin of the symphysis, and to the diminution of the anterior sacral concavity.

Such changes are produced during the lifetime of an individual by carrying loads upon the head, upon either shoulder, or in front of the trunk, the last method being the most effective in causing backward displacement of the upper part of the trunk and consequently of its centre of gravity.

At the same time it is quite obvious that a similar backward displacement may be produced by altering the antero-posterior plane of the sole of the foot, by raising the heels. This is done habitually by wearing boots, as the heels are much deeper than the soles.

As the condition of dissociation of the first sacral vertebra is so common, I think it is probable that, in the majority of cases, it is due to the transmission of the tendency to the bending back of the upper part of the sacrum produced by the alteration of the plane of the foot than by the carrying of loads in the manner described.

In fig. 13, p. 367, 'Guy's Hospital Reports,' I have figured a median section of a case of dissociation of the first sacral vertebra, and by comparing this with a similar section through a normal male pelvis, and with a median section through a sacrum in which the fifth lumbar vertebra forms its first piece, it is seen that in the dissociated pelvis the prolongation forwards of the direction of the plane of the foot on the upper surface of the sacrum is depressed below the normal, that the concavity of the sacrum is decreased in the same relation, that the articu-

lating surfaces on the superior articular processes of the sacrum look much more backwards than usual, and that these conditions are reversed in the instance of fusion of the last lumbar vertebra with the sacrum.

It is interesting to observe the manner in which the same forces which, during the lifetime of an individual, tend to diminish the curve of the sacrum, and to increase the conjugate of the brim, being transmitted to the offspring produce a diminution of this measurement, and an increase in the curve of the sacrum.

In the female subject, the weight of the fœtus when in the abdomen, and that of the child when supported in the usual manner in front of the chest, must both produce a displacement of the trunk backwards from its normal position; and arguing by analogy, we might expect to find the first piece of the sacrum dissociated very frequently in that sex. Such a result would be very prejudicial to the interests of the fœtus in its passage through the pelvic cavity, owing to the consequent diminution in the conjugate diameter, and, as a matter of fact, among the numerous examples of dissociation which I have examined, I have not yet found one in a woman. The same is true of the instances of fusion of the last lumbar with the sacrum, which I have had an opportunity of dissecting.

In the female the developmental factor representing the pressure exerted by the fœtus upon the bony framework of the mother during its passage into the outer world is sufficient to prevent this dissociation of the first sacral vertebra, but the transmitted tendency causes instead an exaggeration of that condition of the sacrum which I have shown to be acquired or produced during the lifetime of an individual by the influence of forces acting in the same direction, namely, a marked diminution in the prominence of the promontory of the sacrum, a consequent increase in the conjugate of the brim, and a diminution of the lumbar and sacral curves. If the explanation which I have given of the factors which usually determine this dissociation of the first sacral vertebra be the correct one, it is

obvious that they must exert a very much stronger tendency to produce such a condition in the female subject, since this sex has always submitted itself with remarkable alacrity to the endurance of the greatest possible discomfort which must result from extremes in this particular fashion.

The developmental factor, as represented by the pressure exerted directly by the fœtus, appears, however, to be sufficiently powerful to save them from the ill-effects to which their vanity would seem likely to make them liable.

The difference between the depth of the sacro-iliac synchondrosis and of the pubic symphysis in the female subject and that present in the male, and the change which takes place in the character of these joints as regards the amount of movement of which they are capable during the later months of pregnancy, may very possibly be due to some genetic influence which is usually regarded by obstetric authors as its cause; yet, at the same time, I would venture to suggest that we ought first to attempt, if possible, to explain this alteration in the mobility of these joints on more simple mechanical grounds, and to avoid the obscure and mysterious till we are obliged to abandon explanations which appear more obvious and easy.

Again I must digress, and refer very briefly to papers already alluded to in the 'Guy's Reports' and elsewhere. I found that in those labourers who carried loads in such a manner as to displace forwards the centre of gravity of the trunk, there was, in well-marked cases, an actual increase in the depth of the sacro-iliac and pubic joints as well as a very considerable limitation in their mobility, amounting in some cases to partial or even complete ankylosis of the opposing bony surfaces. In some few cases in which the load is not very heavy and the movements of the joints are very free on account of peculiarities in the form of labour, a joint cavity may exist in all these articulations as well as between the fifth lumbar and first sacral vertebræ. In those labourers in whom the centre of gravity was displaced backwards by a

moderate load the reverse conditions were observed. There was no tendency to an increase in the depths of the sacro-iliac and pubic articulations, and they allowed of greater freedom of movement than normal. In many cases well-developed articular cavities were present. This extension of the limits of the movements in these joints tends to produce developmentally a diminution in the areas of the opposing surfaces of bone. Some ankylosis took place when the load was very heavy, but this result was very much rarer and less extensive than in forward displacement of the trunk. In the pregnant female during the later months the centre of gravity of the trunk is displaced backwards very considerably, and the load being a comparatively light one the activity of the individual is not materially impaired. Besides, the attitudes assumed by the pregnant female are very varied as compared with the single attitude of the labourer when carrying his load, for while in the erect position there is a tendency to cause rotation of the sacrum around its transverse axis in a direction which is probably the reverse of the normal in the unimpregnated female; in the sitting position the rotation of the sacrum is in the usual direction, and probably exaggerated by the weight and position of the fœtus. The freedom of movement permitted in these joints in the pregnant female is very much increased, and as a natural consequence they develop to a higher type in exactly the same manner that they would if the body were loaded by a dead weight equal to that of the fœtus and bearing the same relative position to the trunk. What I wish to convey is that the lesser depth of the pubic and sacro-iliac articulations and the presence of articular cavities in their interior, especially during the later months of pregnancy, result solely from the mechanical influence exerted by the fœtus, and the development of these conditions illustrates a physical law of which I have described many instances.

Before ending this paper I will allude to the condition of asymmetry of the costal cartilages, which I have shown

to be frequently present in man, as it is exactly analogous to the fusion of the last lumbar vertebra with the first sacral. Like it, this condition of asymmetry can be regarded in one of three lights, either as :

1st. A retrocession or casting back to the condition which is so very common in the higher ape, or that

2ndly. The progenitors of the individual possessing this character had not yet lost this simian arrangement, and that they were behind the vast majority of the human race in this particular, or that

3rdly. The predecessors of the individual had been exposed to the conditions similar to those which had determined the presence of asymmetry in the ape, and that they had transmitted a tendency to asymmetry which in the progeny had resulted in its existence.

The question which now suggests itself is this: How can we account for the asymmetry of the costal cartilages and of the sternal pleurostea in the higher ape ?

As far as I can make out this condition of asymmetry exists only in those of the quadrumana who suspend themselves by the arms, and that in those who hang by the tail the costal cartilages are placed symmetrically, and the sternal segments are each developed from a single centre, or from two centres arranged symmetrically.

If this fact be true, as I believe it is, it suggests the strong probability that this asymmetry of the costal cartilages and sternal pleurostea is due to the traction exerted upon the ribs and cartilages by the muscles during the suspension of the animal by its arm, and that though it does not affect permanently the levels of any of these structures in the progenitor its transmitted tendency produces marked asymmetry in the offspring.

In cases of asymmetry of the costal cartilages in the ape as in man the cartilages appear to be as frequently on a higher level on one side as on the other. In the ape this may be explained by its being ambidextrous.

In man it is very exceptional to find typical examples of sternal and costal asymmetry, such as is present in the

orang-outang. I have described some perfect examples. There exists in many a very marked tendency to the diminution in the number of the sternal centres, each segment of the gladiolus being frequently developed by a single centre of ossification.

The sternum of the human subject may therefore be regarded as retroceding or relapsing to the type of the lower quadrumana owing to the absence of any force tending to render it otherwise than symmetrical. This fact tends to strengthen the argument which I have used as to the mode of development of the costal and sternal asymmetry.

Is there any occupation in which man is exposed to the same influences as the orang?

The life and habits of the sailor would appear to afford the nearest approach to the simian existence, and I will leave it for the reader to decide whether the condition of asymmetry of the sternum and costal cartilages in man is due to the fact that his predecessors had never lost this simian character or whether they had acquired in their occupation a tendency to the production of asymmetry and had transmitted it to their offspring, the tendency resulting in its production in the same way as I supposed it did in the ape. The former supposition appears to me to be much the more probable one.

I would briefly summarize the conclusion at which I have attempted to arrive in the following words, viz.: That not only does the pressure which produces a definite and apparent change in the form of the skeleton of each individual of a certain number of succeeding generations during its lifetime finally result in the apparently spontaneous development of a variation in the form of the offspring which is similar to the changes observed in the parent, or in such a variation as would be the obvious result of the exercise of the same forces at an early period of life; but also that the pressure which, acting upon each of a similar succession of individuals, produces no very obvious change in the form of the skeleton of each, but

instead only a tendency to undergo change, results finally in the spontaneous development of that change as an actuality in the offspring.

If this is true, as I believe I have shown it to be, the transmitted tendency which results in an actuality is an evolutionary factor of very great importance.

Dr. HERMAN thought Mr. Lane's paper one of great interest. He concurred with Mr. Lane in holding that the form of the pelvis was due to inheritance, *i. e.* to influences acting on many generations of ancestors more than to forces acting during the lifetime of the individual. But he thonght the way in which the shape of the pelvis was modified in transmission through many generations was mainly this: that women with well-shaped, capacious pelves were able to bear large, strong children, likely to survive, and to inherit and transmit that type of pelvis; while women with small pelves produced either stillborn children, or small, weak children not so likely to survive, and so a stock with small pelves tended to become few. It might be said that this was like Mr. Lane's view in that it implied gradual modification of the pelvis in accordance with the size of the head; and so it was. But there would be a similar modification of the fœtal head in accordance with the size of the pelvis; for a race that produced children with heads at the full term of pregnancy so large and hard as to come into the world with difficulty, would be less likely to become numerous than one that produced children whose heads were smaller and less ossified, and of which therefore a larger proportion could be born alive. But if he (Dr. Herman) interpreted literally Mr. Lane's view of the way in which the shape of the pelvis was modified, viz. directly by the pressure of the head during labour, he could not agree with him. The head only pressed on the bones bounding the pelvic cavity during the second stage of labour. This stage on an average lasted less than two hours. Supposing the individual to have ten children (which was the largest estimate of the average) this made twenty hours' pressure during the whole of life; and usually no part of this pressure was exerted till after ossification was complete. He could not attribute any appreciable influence on the shape of the pelvis to pressure so brief and intermittent, exerted on hard, fully ossified bones.

Dr. PLAYFAIR said that he should not venture to criticise so important and elaborate a paper, which he had only heard read, and had not studied. Its great value no one could doubt. One remark, however, he would like to make. The author seemed to assume that pressure was generally described by authors on midwifery as determining the peculiar shape and dimensions of the

female pelvis. This seemed to him a statement not capable of proof. He could recollect no modern text-book in which such a reason was given. Moreover, the author had altogether omitted any allusion to what he believed to be the generally received explanation, viz. that the increased size of the female pelvis was caused by the fact that the reproductive organs in that sex are contained within the pelvic cavity, and not external to it as in the male. It seemed very probable that a process of evolution might in time produce pelvic changes, but then one would expect this to result from constant factors, not from accidental and occasional circumstances (such as the presence of a fœtus *in utero*), which after all were a very occasional condition.

Dr. Galabin thought that the Society was indebted to the author for the suggestion of an entirely new principle for the mechanical explanation of the peculiarities of the pelvis. But he thought that his criticism of obstetric authors was not quite fair. He had never understood that the mechanical effects of the body weight and muscular action were supposed to bring about the characters special to the female pelvis, but rather that they acted almost alike upon male and female. The peculiarities of the female had been ascribed to the forces of development, or the presence of the genital organs in the pelvis. One assumption appeared to underlie Mr. Lane's interesting argument. He thought that it required more proof than he had given of it, and he was anxious to hear what he had to say on the subject in his reply. The argument was sound only if any peculiarity in an individual of one sex tended to be transmitted to the same sex more than to the opposite. He thought that if this were true, it ought to be capable of proof in the breeding of animals. His impression was rather that any special character, as in size, colour, or strength, was generally transmitted to sons and daughters equally. The principle would be one of great interest as regards the future of our race, if it were established. Strong-minded women were wont to ascribe any slight inferiority of woman's intellect, which they might admit, to the fact that women have been kept in a kind of slavery for many generations. He had always thought that this was a fallacious argument, and that, if women had in any way suffered, their sons would be the losers as much as their daughters. But if Mr. Lane's principle were true, the case was altogether altered. It was then possible that, if women exercised sufficiently their intellects and their bodily powers, they might, in course of generations, not only wipe out any slight mental inferiority, but come to equal or even surpass the men both in average stature and muscular strength.

Dr. Matthews Duncan had greatly admired Mr. Lane's former papers on the skeleton. In this one he took special interest in the explanation of the changes of the pelvic joints in the end of pregnancy by mechanical influences.

Dr. CHAMPNEYS asked Mr. Lane to name some of the eminent obstetric writers who assigned sexual peculiarities to causes common to the two sexes. He had not himself met with any such statement in any standard work. In all with which he was acquainted, sexual peculiarities were assigned to several causes. An arithmetical objection might also be raised to the author's explanation of the changes by the direct pressure of the fœtus during pregnancy. The effect on respiration cannot certainly begin before the sixth month (nor indeed can much alteration in the pelvic inclination). This gives three months in each pregnancy, or thirty months in ten pregnancies, even if we allow so great a number for the sake of argument. But against this we have to put, not only the remainder of the whole twenty years, or sixty months, added to 120 months of the intermediate years during which pregnancy does not occur (180 months as against thirty months), but the remainder of the whole of a lifetime of perhaps sixty years. The production of alterations in the skeleton during pregnancy was one thing, and the production of alterations of the skeleton by laborious occupations was quite another thing. Mr. Lane was in error in supposing the figure referred to, showing a backward displacement of the last lumbar on the first sacral vertebra to be "the first instance of displacement backwards of the last lumbar vertebra that has been figured or described." He would find an instance in a description of a kyphotic pelvis, which Dr. Champneys had described as one of "posterior spondylolisthesis." ('Obst. Trans.,' vol. xxiv, for 1882, p. 246.)

Mr. LANE, in reply, felt sure that it would be quite impossible for him to attempt to answer spontaneously the many questions and criticisms upon the conclusions at which he had arrived in his paper, as the arguments necessitated by each were obviously too complex and lengthy. He would prefer, therefore, to base his case upon the material contained in his paper. He felt much indebted to the Fellows of the Society for the kind manner in which they had received his paper, and he trusted that he had not wearied them by details which appeared to him to be necessary for the support of the views he had endeavoured to enunciate in it.

ON TONIC UTERINE CONTRACTION WITHOUT COMPLETENESS OF RETRACTION.

By J. Matthews Duncan, M.D.

(Received February 25th, 1887.)

(*Abstract.*)

Dr. Matthews Duncan calls attention to the occurrence of a rigid, spastic condition of the uterus, especially just after delivery, without complete retraction and while the uterus has no content opposing complete retraction or closing. In this state the hard uterus has a globose cavity. He more particularly calls attention to the occurrence of hæmorrhage from the placental site while the uterus is in this state of firm spastic contraction with incomplete retraction, and mentions cases.

He regards this hitherto unknown or unrecognised condition as probably affording an explanation of the well-known difference of opinion among obstetric authorities, some asserting the occasional occurrence of hæmorrhage after delivery from a hard contracted uterus, some denying it.

A similar condition, he believes, occurs very rarely in the unimpregnated uterus.

Not long ago I was engaged to attend in labour a multipara on account of the severe post partum flooding which she had had in her past confinements. The labour progressed naturally but slowly till the fœtal head fully occupied the pelvic excavation. Then it was arrested for some hours, and then delivery was completed by forceps. Just before the delivery of the child ergot was administered, and after its delivery the uterus was supported and

kneaded gently. I was now, of course, keenly alive to the expectation of hæmorrhage. For a few minutes all went on favourably. The placenta was expressed; then hæmorrhage began, and continued alarmingly for some time. At last all was well finished, and the patient made a good recovery. The flooding was copious, but not to the greatest degree, for it lasted some time, and the prostration was not extreme at any time.

The observation to which I desire special attention is the following, and it was confirmed by Dr. Godson: During the continuance of the flooding, after the discharge of the afterbirth, the uterine body was found to be of about the size of a cocoanut, rigid, hard, and scarcely to be flattened or compressed. The fingers, and at one time the hand, introduced into the uterine cavity found easy accommodation there, and the above conditions of the body of the uterus were ascertained. Presently contraction with completeness of shrinking or retraction came on, and the peculiar interest of the case was gone.

Last year, along with Dr. Sedgwick, I attended a case of miscarriage in the third month. Two drachms of liquid extract of ergot had been given. The fœtus was spontaneously expelled some hours before my visit, and was somewhat decomposed. A little hæmorrhage flowed continuously; the placenta was retained. Examining under the profound influence of chloroform I found the placenta adherent, the cervix dilated so as to allow the passage of a finger, the body presenting a cavity as big as a large egg filled with clot. The whole cervix and body were densely hard, the body incompressible. At the internal os was a special stricture, with a knife-like edge. Watched for fully fifteen minutes there was not observed a moment of relaxation. So far as could be judged this condition had lasted for several hours. Nine hours after the examination above described the placenta was spontaneously discharged, a result, no doubt, of then supervening contraction with completeness of retraction.

Lately I was called by Dr. Walker to a young primipara

confined eleven days previously, and since then always losing blood, the loss having lately increased. Examination revealed a large hard uterus, the cervix patulous but otherwise natural. Ergot was administered without improvement, and next day she was put under an anæsthetic with a view to thorough investigation. Nothing but fœtid blood was found in the uterus. The body of the organ formed a globose, hard mass, whose cavity was big enough to hold the clenched fist. The cavity was kept clean by antiseptic irrigation. Ergot was continued. She gradually recovered.

In the cases just given there was crampy or spasm-like rigidity of the whole uterus or of the body alone. A similar condition of the external os uteri or of the internal os has been frequently described as tetanus or persistent spasmodic rigidity, and Dr. Roper's paper on this subject is well known. In at least some of these cases of rigid cervix from spasm it is possible that the morbid condition was not confined to the cervix; being described in the cervix alone, because it alone was easily accessible, and alone attracted attention.

Similar persistent active retraction occurs in the ordinary hour-glass relaxation, and probably also in inversion of the uterus.

In the cases which I have mentioned, the point to which I direct attention is the hard, crampy, or tetanic condition without completeness of contraction or of retraction, in one instance so long as eleven days after delivery. The observation of this in the case of a rigid cervix obstructing the progress of the first stage of labour is rare.* But it is not rare to have half of the observation, namely, the temporary not persistent contraction without completeness; that is, the soft cervical margin becomes hard during a pain, but the contraction does not close the os, sphincter-

* In his great work, 'Das untere Uterinsegment,' Hofmeier expresses more than doubt of a sphincter-like local contraction ever being observed, and he supports his view by the names of Bandl and Lott. See 'Der schwangere und kreissende Uterus,' Herausgegeben von Dr. Karl Schroeder, S. 47.

like, and it again relaxes or becomes soft. This failure to close the os, or nearly close it, is observed when there is no apparent mechanical obstacle to its closing. Were there such mechanical obstacle as an adpressed fœtal head, there might be no peculiarity in its failure to close, the resistance being greater than the muscular force. The rare deviations are such as I have described, or, in the case of the external os, instances in which the os is of the size, say of a shilling, the cervix persistently hard in cramp, and resisting every kind of dilating force except such as lacerates or incises.

It has been supposed that muscular fibres may not only contract and be again relaxed, but may also actively elongate themselves in a diastole. The condition of persistent spasm without completeness of contraction may be explained by their becoming rigid in a state of partial contraction, or by their contracting without such displacement or rearrangement as is necessary for completeness. It cannot be satisfactorily explained by supposing the contraction of only a few fibres, for the hardness of the muscle and its unchanged condition during contraction imply a continuance of great force maintaining the rigidity, but not of force producing completeness of contraction.

Cramp of a voluntary muscle, as of the gastrocnemius, or the prolonged spasms of hystero-epilepsy, do not always produce the full effect of the muscles involved. The foot is not extended violently; the fingers are not flexed completely.

Before concluding, I call attention to a point which has been long a matter of controversy, and on which the last word has not been said.* Discussing the arrestment of hæmorrhage in cases of placenta prævia, I have written that "if the uterus is firmly contracted, hæmorrhage from the placental site does not occur;" and now this statement appears to me to be imperfect or insufficient. In place of "firmly contracted," the words should be "firmly

* 'Mechanism of Natural and Morbid Parturition,' p. 418.

and completely contracted;" or better, "firmly and completely contracted and retracted." If the uterine body is firmly and completely contracted and retracted, hæmorrhage from the placental site does not occur.

In the work already referred to, there are further relevant remarks, as follows: "But eminent obstetricians have tried to unsettle the professional faith in a contracted uterus as an efficient hæmostatic after delivery. It is the sagacious Gooch who is responsible for this belief, that a flooding may come in the usual way from a uterus well contracted after delivery. Gooch founds his belief on a case whose history he gives; and, remarkable to tell, this case presents nothing at all unusual. It is just a case of ordinary flooding post partum, such as every accoucheur is familiar with. After delivery the uterus became well contracted, but there was no flooding from it then. Subsequently it became relaxed, and flooding began, as Robertson has pointed out; and that it was so relaxed is proved by the fact that Gooch put his hand into it in order to induce contraction and stop the hæmorrhage! Gooch had, in fact, no ground whatever for unsettling the general faith of the profession in a contracted uterus after complete delivery. In my opinion this article of medical faith is unassailable. But Gooch has had many followers, among whom are Velpeau, Rigby, Ingleby, Michaelis, Ferguson, and Farre; and against whom Boivin, Roberton, and Barnes have given evidence. In order to substantiate the belief of Gooch, it will be necessary to have cases carefully observed by a competent person, who is well aware of the various sources of error in judgment. I know of no such cases. It has been adduced, as telling in favour of Gooch's view, that copious hæmorrhage may take place from an unimpregnated uterus. But such hæmorrhage is not post-partum flooding. It is not from the same source. Besides, we cannot tell whether in such cases the organ was in a state of firm contraction or not. Similar remarks may be made in answer to any defence of Gooch's doctrine, founded on

the frequently fatal hæmorrhage of uterine fibroids. The proposition I enunciate is, that it has never been shown that uterine hæmorrhage, of the ordinary post-partum kind, ever takes place from the uterus when it is in a state of moderately firm general contraction. Among the sources of error are the following:—1. Variations in bulk of the empty and contracted uterus. If the observer has a preconceived idea of the bulk of the empty uterus taken from the ordinary run of cases, he may, in an individual case, if judging from size, be greatly deceived. For some uteri are extremely small (and were, no doubt, proportionately weak) after delivery, scarcely larger than the fist; and such a uterus, if expanded to an ordinary size, would certainly be in a state of relaxation. Other uteri are, after delivery, and when in strong contraction, very large when compared with the ordinary size (and were no doubt, proportionally strong). 2. Variations in position of the uterus after delivery. If the uterus has sunk into the true pelvis, it may appear small and contracted when it is merely collapsed and depressed in the abdomen. If the uterus is high in the abdomen, which is often a consequence of repletion of the bladder, it may appear to be larger than it really is. 3. A uterus may be hard and feel as if contracted, when the hardness is merely the result of passive tension. This is often seen in cases of the kind called hour-glass contraction. On this subject I have elsewhere remarked as follows: 'In these descriptions of, and reasonings upon, cases of hour-glass contraction, of inversion, and of hæmorrhage, many authors have erred in taking a hard part of the uterus for a part necessarily in a state of action. Now, while hardness of uterine wall is in most cases a good and sufficient sign of muscular action in the hardened part, it is not invariably so. For, in cases of hour-glass contraction, and of inversion, the hardness may arise from passive tension. The bladder of urine and ovarian cysts frequently illustrate hardness of flaccid bags produced by passive distension. In like manner, a paralysed portion of uterus may be hard

from being tightly replete with placenta or other contents retained by stricture; and the fundus of an inverted uterus may be hardened by the circumstances of its inversion, apart from muscular action of the hard part.' "

Now, it appears to me that the condition which I have described in this paper may solve the difficulty and reconcile the two parties. Cases may have been observed of hæmorrhage with intense contraction, globular hardness yet without completeness of retraction; and these have been described as hæmorrhage from a contracted uterus, perhaps from a uterus believed and described as completely contracted while it was really not completely contracted. On the other hand, the defenders of the position that hæmorrhage did not occur when the uterus was firmly contracted failed to sufficiently state their case, neglecting to add to the condition of firm or intense contraction the condition of completeness.

It is after delivery that the above observations have been made, and it is at this time that such can be made most easily and satisfactorily. But I have carefully observed cases of a similar or the same kind, apart from pregnancy or delivery altogether. Some of these are given in appendices to the third edition of my 'Clinical Lectures,' especially in a chapter entitled "On Spontaneous Dilatation of the Virgin Uterus with Hæmorrhage."

The cases further show the necessity of completeness of retraction for the natural progress of uterine involution, in addition to the well-known histological changes which are also essential parts of that process. Subinvolution may be a result of insufficient retraction as well as of imperfection in the atrophic processes following delivery or abortion.

Dr. HERMAN had seen an example of the condition described by Dr. Matthews Duncan. It was published in the 'Lancet,' vol. ii, 1882, p. 1110, and was a case of secondary post-partum hæmorrhage treated by the injection of fluid into a vein, which had been published to illustrate that practice, and therefore the descrip-

tion of the uterine condition was not so full as it might have been. The hæmorrhage came on the ninth day after delivery. At 1 p.m. the uterus was relaxed. At 2.30 p.m. it formed a perceptible tumour. At 4 p.m., when seen by Dr. Herman, its cavity was globose, large enough to contain a fœtal head, and its walls hard and rigid, not relaxed and flabby as usual with hæmorrhage. The interior was swabbed with solution of perchloride of iron, and this was followed by thorough contraction of the uterus down to its proper size, and arrest of hæmorrhage.

Dr. HORROCKS asked if the cervix as well as the fundus uteri was affected by the tonic contraction, because in regard to cavities such as the uterine and vesical, when the detrusor contracted the sphincter dilated. Whether it was a general law, that when a muscle contracted its opponent relaxed, physiologists were not agreed, at all events with reference to the limb muscles, such as the flexors and extensors. He called attention to the fact that though the contraction of the uterus in Dr. Duncan's case was tonic, yet it was incomplete, leaving not merely a potential but an actual cavity. He mentioned a case occurring in his own practice where bleeding came on ten days after labour. The uterus (fundus) was contracted and hard, and yet the cavity was not closed.

Dr. GALABIN was specially interested in hearing the paper, because he had thought that Dr. Duncan, in a former paper on contraction and retraction of the uterus, had not distinguished a sufficient number of conditions in which the uterine wall might possibly be. He had understood him then to identify that state of continuous action or tetany of the uterus, which is well known as an effect of protracted labour with retraction. Dr. Galabin considered that it was quite different, and more analogous to the post-partum condition described in the present paper. Retraction was a normal sequel of contraction. Continuous action was abnormal, and might even be rather antagonistic to retraction, for after such continuous action the uterus was liable to post-partum hæmorrhage. He remembered a case of cancer of the whole cervix in which the uterus passed into a state of continuous action without any rhythmical pains having ever occurred, and the pulse became accelerated as in prolonged labour. Cæsarian section was performed. The uterus could not be induced to retract, hæmorrhage took place from the placental site and could only be stopped by perchloride of iron. He thought such a condition might have a distant analogy to rigor mortis. In rigor mortis a muscle was rigid, as if strongly contracting; but, if the tendon were divided, the muscle did not retract in the least. The condition was really one of stiffening.

Dr. GODSON remembered well the case Dr. Matthews Duncan had recorded, and could testify to the extreme accuracy of the account given of it. Dr. Godson had on more than one other

occasion noticed troublesome post-partum hæmorrhage, when the uterus could be felt contracted as hard as a cricket ball, but he had noticed that the cavity was not globular in shape, but distorted, by no means an hour-glass contraction, more of a kidney-shape; and he had held two fingers in the uterus while the other hand grasped the fundus, until the spasm passed off, the uterus assumed its proper shape, and the bleeding was arrested.

Dr. CLEVELAND said he had been sometimes puzzled to account for bleeding after natural labour, where the uterus appeared to be of normal size and contraction, but, as these uncommon cases had occurred in very delicate women, he had attributed them to the effect of a hæmorrhagic diathesis. Of this he felt convinced, that in earlier experience his anxiety on some occasions to remove coagula from the uterus may have been carried too far. He believed that where more than usual bleeding resulted from feeble or imperfect coagulation, it was sometimes necessary for its arrest that a clot of some size should be allowed to form within the uterine cavity.

Dr. CHAMPNEYS observed that in most, if not all of the cases, ergot had been administered. He thought that these cases threw some light on the vexed question of the action of ergot, which seemed, at least in some cases, to produce tetanus of the uterus without reducing its size, or producing retraction.

Dr. GANDY said that he had had in his own practice two cases of a similar nature; in one, after the placenta had been expelled, the patient flooded slightly; and, thinking this might be due to some clots, he placed one hand over the abdomen, and found the womb apparently contracted, hard and large; on introducing his left hand through the os and up to the fundus to turn out these clots, the uterus appeared to be in the spastic condition described by Dr. Duncan, the cavity was globose in form, the clots came away, and after about ten minutes with external pressure, firm contraction was effected.

A CASE OF PREGNANCY COMPLICATED BY SECONDARY HEPATIC CANCER.

By JOHN PHILLIPS, B.A., M.B.Cantab., M.R.C.P.,
PHYSICIAN TO THE BRITISH LYING-IN HOSPITAL.

(Received March 2nd, 1887.)

(*Abstract.*)

THE patient, aged 40, mother of nine children, was operated upon in November, 1883, for scirrhus of the right mamma. The registrar of St. Thomas's Hospital has kindly furnished a report of her condition. Six months afterwards she was seen by the author for considerable pain in her right side; she was then six months pregnant. The pain increased in spite of all remedies, and her condition became so grave that after consultation induction of labour was performed. An easy labour followed, and, on the uterine tumour lessening, the liver was found enlarged and covered with umbilicated bosses, probably of a malignant nature. Jaundice and ascites appeared and she died comatose three days after her confinement.

The author makes a few remarks as to the treatment in these cases, confining his attention more particularly to the rectitude of induction of premature labour. He also quotes one other case of a similar character.

A. B—, aged 40, married, had had nine children, eight of whom were living; the last child was born three years ago. Her family antecedents were good, there being no history of malignant disease.

On November 5th, 1883, she was admitted into St. Thomas's Hospital, and I am indebted to the courtesy of the present surgical registrar for the early notes of her

case. "A hard nodule, the size of a filbert, was noticed two months before admission; the pain was not severe. One week before there was some swelling in the right axilla."

On admission her condition was as follows:—"There is a hard rectangular tumour in the right breast, just above and external to the nipple; the skin is free, and there is no deep adhesion. There is a mass of glands the size of a small walnut under the fold of the axilla.

"On November 10th the mass of glands and the breast were removed. Some glands high up beneath the clavicle were not removed as it seemed impracticable. The greater part of the wound healed by first intention, and she was discharged November 28th. There was no sign of any other deposit. The glands were impalpable except through the wound."

May 2nd, 1884.—For six months she has felt quite comfortable since the operation, but fourteen days ago noticed a cutting pain in her right side, sometimes worse after meals; it "catches" her on a deep inspiration. There is a slight cough, with a yellowish-green expectoration. She has been emaciating since last November, indeed, since her discharge from the hospital.

Present condition.—There is a softish cicatrix, about five inches long, over the site of the right breast; it is adherent to the subjacent ribs, but not tender except towards the axilla. No glands can be felt in the axilla, and there is no œdema of the right arm or hand.

Lungs.—Breathing slightly hurried, twenty-one respirations per minute. Lung sounds normal, except that there is apparently deficiency of resonance at the right base behind, accompanied by rather feeble breathing. The liver dulness is normal, and there is no tenderness on pressure.

She was nearly eight months pregnant, and the fœtal heart sounds could be easily detected in the right hypogastrium. A morphia pill was prescribed with a liniment of belladonna to be rubbed in.

9th.—The patient was too ill to leave her bed. She had been in great pain during the week, especially on inspiration over the right base behind. The physical signs in the lung were unchanged, but there was a tender, slightly mobile tumour to be detected just below the edge of the cartilages of the right ribs. It was considered to be the gall-bladder enlarged. The urine bile-tinged, but no albumen. Respirations 26, pulse 96. The patient looked anxious and her face much drawn. There was no jaundice; the patient having lived long in the East Indies her skin was of a deep sallow hue. The pregnant condition obscured the diagnosis, and the question of the presence or not of abdominal dropsy was left undecided. The treatment was continued.

20th.—She was decidedly worse, the pain being of an agonising description, and seeming now to radiate all over the upper part of the abdomen. Vomiting was a troublesome symptom. Pulse 110, temp. 100^{c}, resp. 28. Her abdomen was very distended and flatulent. Her condition was so serious that after consultation it was decided to bring on labour. This was accordingly done with a catheter in the usual way. Labour followed and was completed in twenty-six hours' time, having been normal in every detail. The child, a well-developed female, was born alive. Immediately after the uterus was emptied the diagnosis was in doubt no longer; large umbilicated bosses could be felt all over the hepatic region, while the liver dulness was much increased. There was a rapid reappearance of the flatulent distension, and fluid was discovered in both flanks. Her condition was most grave. Pulse 112, resp. 28, temp. 101°. The conjunctivæ jaundiced, petechiæ of the skin over legs and arms, and tendency to delirium. The pain was of the most agonising character and entirely unamenable to drugs; six leeches applied twice a day were the only remedies giving relief.

She gradually got worse, the abdomen more tympanitic, and the jaundice deeper, and finally she became comatose

and died three days after her labour. No post-mortem was allowed, but there seems no possible doubt but that the disease was medullary cancer, for it is not easy to mistake the peculiar umbilicated bosses for any other pathological condition.

From the above history it will be seen that the patient (probably quite unknown to herself), while in St. Thomas's Hospital, was at least one month pregnant, and although her right breast was removed no miscarriage resulted.

I do not propose to enter here into a discussion as to the advisability or not of operating on scirrhus of the mamma during pregnancy, for it is fully treated of elsewhere. Opinions differ as to the effect of the pregnant condition on the rapidity of its growth, some, on the one hand, maintaining that it is delayed during the actual pregnancy, but immediately labour is over increases with great rapidity; others, on the other hand, bring evidence to prove that only on pregnancy commencing does the growth begin to assume more formidable dimensions.

Certainly during pregnancy and lactation the calibre of the blood-vessels of the breast is greatly enlarged; hence if we accept the second theory, the increased functional activity of the breast may account for the rapid course of these cases.

Primary scirrhus of the breast may appear in a secondary form, usually the medullary, in most of the organs of the body, as the lungs, brain, and liver. Certainly infection of the liver is rare, and much more so as a complication of pregnancy; indeed, I have only been able to find another similar case, and that after prolonged search.* The patient was forty-five years old, and the tumour was noticed about a year after the birth of her third child. She was strongly recommended to have it removed, but refused. Shortly after this she again became pregnant, the tumour meanwhile growing rapidly. When eight months had passed she was suddenly seized

* 'British Medical Journal,' 1878, vol. ii, p. 474 (Wilson).

with abdominal pain and nausea, coffee-ground vomiting set in, and she died in a few days. A post-mortem examination showed cancer of the liver and extravasation of blood under the mucous membrane of the stomach. Induction of labour had been proposed, but was negatived on consultation. The fate of the child is not mentioned. The main question to decide seems to be the treatment in cases of this kind. The fate of the woman is unfortunately certain, and all our efforts must therefore be directed to the best means of saving the child.

1. We may allow the patient to go to full term, relieving her pain and other symptoms in any manner possible without prejudice to the fœtus.

2. In case of her death, post-mortem section may be made and the child thus saved.

3. Premature labour may be induced.

In the case I have related the patient could not possibly have lived a week longer, and therefore induction of labour was imperative, and I scarcely think that the shock of such a slight operation could have shortened her life by any appreciable time.

I think the risk to the child's life is too great in performing Cæsarian section for this mode of treatment to be very favourably entertained.

One point of considerable interest in this case seemed to be the peculiar site of the pain. Doubtless this was due to one of the malignant masses projecting from the convex surface of the liver and pressing on the diaphragmatic pleura.

My object in bringing this case before the Society is to elicit from Fellows of larger experience than myself some definite rules for our guidance in similar cases.

Dr. HERMAN had read a paper before the Society ('Trans.,' vol. xx) "On the Complication of Pregnancy with Cancer of the Genital Canal." In that paper he had discussed the influence of pregnancy on cancer of the genital organs, and had said that from the greatly increased supply of blood to the breast and uterus during pregnancy, we should expect that cancer of these

parts would grow faster if the patient became pregnant; and he had quoted a case which showed that this was so. A colleague had since communicated to him another case which showed the same thing. Dr. Phillips had referred to authors who were of opinion that pregnancy retarded or suspended the growth of mammary cancer. He (Dr. Herman) believed that this was an opinion merely, and was not supported by observation. In the paper referred to he had shown that in cancer of the uterus pregnancy frequently ended in the birth of a decomposing fœtus. In these cases the death of the child was not due to difficulty in labour; and the histories of the cases showed that, at least in some of them, there had not been much hæmorrhage, and it therefore seemed as if the cancerous cachexia tended to cause the intra-uterine death of the child. If this were so, it was a strong reason for bringing on labour prematurely, as Dr. Phillips had done. Dr. Phillips had spoken of Cæsarian section as being dangerous for the child. He doubtless based this opinion on the fact that the statistics of this operation showed a high infantile mortality. But he (Dr. Herman) thought that statistics were here misleading. The risk which the child necessarily incurred in Cæsarian section was almost nothing, and the high death-rate of the children arose from circumstances not inseparable from the operation, but, so to speak, accidental to each case, such as too late performance of the operation, or want of attention to the child at the time of operation, &c. If the operation were done when the child was alive, and with proper precautions for the child's safety, there was no reason why its life should be lost.

Dr. JOHN PHILLIPS, in reply, said that he had purposely avoided entering into the question of the increase of malignant disease of the mamma consequent on pregnancy, as it seemed beside the matter at issue. He had read Dr. Herman's paper with great interest; he still, however, thought that induction of premature labour was preferable to the Cæsarian section, as the life of the child was much less in jeopardy in the former proceeding.

A CASE OF HÆMATOCELE TREATED BY OPERATION.

By JOHN PHILLIPS, B.A., M.B.CANTAB., M.R.C.P.,
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(Received March 23rd, 1887.)

(*Abstract.*)

THE author relates the case of a young married woman with three children, who was attacked during menstruation by subacute rheumatism with an aortic systolic murmur. Menorrhagia ensued and continued for a month. A tumour of the size of a Tangerine orange was found in the posterior *cul-de-sac*. After the lapse of seven days a large swelling had formed in the left broad ligament, pushing up the uterus to the right and producing a considerable abdominal swelling.

The tumour descended into the recto-vaginal wall, and in consequence of the precarious condition of the patient aspiration was performed, with a negative result. The next day the cyst was opened under ether *per vaginam* with a Paquelin's cautery, and a large amount of blood-clot let out. A Keith's ovarian drainage-tube was inserted into the wound. The tumour rapidly subsided, and with the exception of one temporary relapse owing to some difficulty with the tube, the patient made an uninterrupted recovery.

The author calls attention to three points of interest in the case, viz. the complication by the rheumatism, the comparatively gradual formation of the hæmatocele, and the necessity for operative interference. He thinks that the case may be fairly considered as one of *cachectic* hæmatocele. The question of operative treatment is also touched upon. A temperature chart accompanies the paper.

THE case I have described in the ensuing lines is one of considerable interest, both from a pathological and clinical point of view, in the first place from the unusual mode of formation of the blood tumour, and in the second because of the opportunity afforded of watching its progress from the very commencement.

The patient, A. C—, was married, and twenty-six years old; she had had measles, scarlet fever, and pertussis as a child, and her general family history was good. She had been married six years, during which time she had had three children all alive, and one miscarriage in the second month, while suckling the first child. Her last confinement was ten months ago, the labour and lying-in being quite normal. Her catamenial periods have been quite regular since that time; the flow is scanty, painless, not of high colour, lasts four days, and she has some discomfort about her back, but nothing to cause her to lie up at these times.

December 6th, 1886.—A month ago her catamenia appeared as usual, and have lasted up to the present time, while for the last fourteen days she has had slight bearing-down and forcing pains at intervals of four or five days, but no clots or shreds have been passed, although careful search has been made. For the first time to-day she noticed a change in the discharge, a much brighter red colour being assumed, but no fœtor was noticed. For ten days she has had severe pain in her left shoulder, accompanied by some slight swelling but no redness; this, together with a general feeling of malaise, caused her to go to bed. She has had copious sour-smelling night sweats, anorexia, and a temperature varying between 101° and 103° Fahr., with a pulse of 120 per minute for nearly a fortnight.

At this period of her illness I saw her in conjunction with Mr. Reginald Clarke, her medical attendant, and found a pale, somewhat phlegmatic and anæmic brunette. Her skin sweating and sour smelling. Expression anxious; her tongue moist and covered with white fur. Her right

knee is painful if moved. Pulse 126, small and soft but regular. Breathing quite easy. Her decubitus dorsal but the legs not drawn up.

Heart sounds.—The apex-beat is diffused, half an inch internal to nipple line, and the first sound is "murmurish" in character. At the second right costal cartilage a soft systolic murmur is audible.

The breasts were normal, not enlarged, the veins not prominent, and no serous fluid could be expressed from them. There was some slight tenderness on deep pressure in the left iliac fossa, but no dulness could be detected.

Per vaginam.—The uterus is mobile and painless; the os uteri transverse and not softened; there is no laceration of the cervix. The sound passed in the normal direction, the uterine cavity measuring two and three quarter inches. In the posterior cul-de-sac, and somewhat to the left, can be detected an irregularly lobulated swelling of the size of a small Tangerine orange, mobile, not tender, and apparently having no connection with the uterus. There were a few drops of blood-stained discharge after examination. The rectum was quite empty.

Urine.—Specific gravity 1028, acid, with a copious deposit of pink urates on standing. There was neither albumen nor sugar present.

The nature of the tumour was at the time considered doubtful, but either an early extra-uterine fœtation, a prolapsed multilocular ovarian cyst, or scybala were thought to be possible.

The treatment was therefore expectant with regard to the pelvic condition, while the rheumatic affection was combated by salicylate of quinine and other drugs as the symptoms arising demanded.

December 13th, 1886.—I saw her again to-day, after week's interval. Her condition appeared to be considerably worse. The discharge ceased entirely five days ago. There has been a continuation of the pyrexia, but the sweats have ceased. I found her face anxious and drawn, the tongue dry, and coated at the edges with

sordes. Pulse 124, weaker but quite regular. Respirations hurried, 32 per minute.

Per hypogastrium.—Considerable tympanites was present, but there was an entire absence of abdominal tenderness. No tumour could be defined.

× Aspiration. † Operation. ‡ Rigor.
× × Tube could not be passed into cavity of wound.

Per vaginam.—The relations of the tumour appeared to have quite altered. In the posterior cul-de-sac, low down and slightly to the left, was a semi-fluctuating, intensely tender swelling, with considerable œdema of the overlying vaginal mucous membrane. This mass had pushed the uterus high up, and pressed it forwards and to the right, making it semi-mobile only.

Per rectum.—A mass the size of a cocoa-nut, with slightly undulating smooth surface, could be detected through the recto-vaginal wall. An obscure sense of fluctuation was obtainable by vagino-rectal palpation.

14th.—The tympanites had much increased, and the tongue was dryer. Pulse 124, and temp. $101\frac{2}{5}°$. There was a continual desire to micturate, while considerable

dysuria attended the act. With the object of reducing the tympanites, an enema composed as follows was given in warm gruel:

℞ Ol. Rutæ, mxx;
Ol. Terebinth., ʒss;
Ol. Ricini, ʒj.

The enema tube was introduced with great difficulty owing to some obstruction in the rectum. As a result the bowels acted freely, and the distension became much diminished. A large mass could now be felt cropping up above the pubes, and extending from a point level with the umbilicus on the left side, and gradually sloping downwards towards the right.

Per vaginam.—The tumour had increased considerably in size, almost entirely blocking up the vagina. It was lower down in the recto-vaginal wall than twenty-four hours before. The uterus was high up, almost out of reach, the tumour pressing it deeply into the vesico-vaginal wall.

Per rectum.—The sac, which was very tense, had attained to the size of a fœtal head.

The condition of the patient was now so serious that some kind of interference was deemed necessary. I therefore the same evening punctured the tumour *per vaginam* with an aspirating needle. Nothing was drawn off, although a large cavity was evidently entered. On withdrawing the needle, a piece of old blood-clot was found in the eye. Antiseptic precautions were strictly observed.

Operation (December 15th, 1886).—An anæsthetic being given, the patient placed in the dorsal position and the vagina well syringed out with carbolic lotion, I opened the sac with a Paquelin's cautery, through a boxwood speculum, at the site of the puncture by the aspirator, making an incision an inch long. A large amount of clots and clear fluid of reddish brown colour escaped. Three or four somewhat laminated clots followed. On passing the finger gently into the cavity

large masses of blood-clot could be detected adherent to a cyst wall and easily detached. The lining membrane of this hæmatic cavity was quite smooth, and a sound passed nine and a half inches directly upwards. A Keith's glass ovariotomy tube was inserted into the opening, up to the circular ridge, and the vagina plugged round it with cotton-wool sprinkled with iodoform. The discharge was allowed to drain into a pad of carbolic gauze.

The next day the sac was gently syringed out with lukewarm Condy and water. Her general aspect was much improved, the tympanitic condition of the abdomen was considerably less, and the tumour could easily be mapped out by palpation. The cavity was reduced to seven and a half inches.

20th.—Last night the temperature rose to 103·5° and the pulse to 134; her general condition, however, seems better. The tongue clean and moist. The aortic murmur appears unchanged. A large putrid clot was found blocking up the tube.

The uterus could be distinctly felt pushed up against the symphysis pubis, being deflected to the right. The cavity of the hæmatoma was further reduced to five and a half inches. The hypogastric tumour was still made out to extend over to the right side, but much less than at the time of operation.

The patient steadily improved from this time up to the 28th, when it was found impossible to introduce the tube. A catheter was therefore inserted, and the cavity washed out daily. On the evening of the 30th her temperature was normal, and pulse 96. The cavity was found to be only two and a half inches. The uterus was semi-mobile, although still deflected to the right. The same evening there was an inability to introduce the catheter into the opening, owing to its contraction and to the retraction upwards of the vaginal wall. A sudden cessation of the discharge ensued, followed by a rigor and temperature of $103\frac{3}{5}°$, with hot burning skin and a feeling of nausea. I passed a pair of long forceps with considerable difficulty

into the opening, and dilated it up, about a teaspoonful of pus escaping. From this time she rapidly convalesced, the discharge ceased, and she was allowed to get up.

January 27th, 1887 (a month afterwards).—The physical signs were found to be as follows:—All distension of the abdomen had disappeared, and no trace of the tumour could be detected. The uterus was mobile, the sound passed still to the right, but the cavity measured two and a half inches. In the left broad ligament, high up and somewhat posterior, could be felt a swelling the size of a Tangerine orange, and over its vaginal surface the depressed cicatrix, by the side of the cervix and almost out of reach. A fine probe was admitted to the extent of half an inch, and by deep pressure over the abdomen a drop of pus was expressed.

The catamenia appeared five days after this, lasting four and a half days, the flow being more excessive than usual with her.

She was sent to Littlehampton, and returned after a month's stay, much benefited; the catamenia appeared at the regular time, and the loss was normal in amount. The aortic murmur gradually disappeared.

On March 19th I found the uterus quite mobile, and the tumour in the broad ligament about the same size, hard and painless on pressure.

Remarks.—The points of interest in the foregoing case appear to be three in number:

1. The complication by the subacute rheumatism with its attendant temporary cardiac complication.

2. The comparatively gradual formation of the blood swelling and the absence of pain.

3. The necessity for operative interference and the rapid recovery ensuing thereon.

Bernutz considers hæmatocele as a hæmorrhage symptomatic of certain morbid conditions which ought to be the main object of pathological study, and doubtless he is right in a limited number of instances. Extravasations of blood of more or less extent frequently occur in some

females during or in lieu of menstruation. Should the quantity effused be small no swelling is produced and the symptoms are obscure, while if the amount is greater, a distinct swelling results and can be detected by vaginal exploration.

Any factor altering the condition of the blood or blood-vessels would in consequence tend to promote an increased escape at a time like the menstrual epoch. Rheumatism is doubtless associated with some blood change, and in the case related this was evidently the chief and constitutional cause. I think, then, that this case might with some degree of consistence be placed under the heading of *cachectic* hæmatocele.

In 1886 ('Obstetrical Transactions,' vol. xxviii, p. 89) I exhibited a specimen in which, owing to the twisting of the pedicle of an ovarian cyst hæmorrhage had taken place between the layers of the left broad ligament, a hæmato-salpinx had formed, and there were old clots in the posterior cul-de-sac, besides copious hæmorrhage into the cyst. The patient had had menorrhagia just before the operation. This seems to throw some light upon the case now under consideration.

Probably blood escaping from Rouget's plexus passed into the Fallopian tube and may for some reason have formed a hæmatosalpinx, effectually barring further escape of blood in that direction. The rheumatic condition continuing, so also did the oozing of blood, and the layers of the broad ligament were gradually forced apart. This extended over to the right side behind the uterus, but probably only to a very slight amount. The uterus and the appendages on the left side were, so to speak, lifted out of the pelvic cavity.

With regard to the operative treatment adopted, at one period of the patient's illness abdominal section was discussed, but with such a distended condition of the bowel the complications resulting from opening the abdomen would have been numerous and serious. Surgical interference of any kind in hæmatocele is, as a rule, deprecated, and it

was only after very serious consideration that I subjected her to the risks of septicæmia. The only other alternative was waiting until the vaginal tumour burst either into the vagina or rectum, the latter of which is now almost universally condemned even when produced artificially.

The high temperature during the earlier part of her illness was doubtless due to the rheumatism, but at the time of operation I think tension and, to some extent, septic absorption may have added their quota to the general result.

Should she again become pregnant it will be interesting to note the condition of the cicatrix after labour has terminated.

Dr. GALABIN thought the case was of interest as bearing upon the question when vaginal section and when abdominal section should be chosen, if it became necessary to operate upon a hæmatocele. He had never intentionally opened a hæmatocele, but had twice performed an exploratory abdominal section with favourable results in cases which turned out to be hæmatocele not dependent upon extra-uterine fœtation. In both there was an elastic rounded tumour, reaching up to the umbilicus, which was thought to be probably an ovarian tumour complicated by peritonitis. In both cases the peritoneal cavity was washed out with hot water, the contents of the hæmatocele having been in one of them in an intensely fœtid condition. Abdominal section would, of course, have the advantage, in some cases, of allowing the removal of a source of mischief. Thus, in one of the cases mentioned above, double pyosalpinx was found and removed.

Dr. HERMAN thought that in cases such as that related by Dr. Phillips, in which the formation of a hæmatocele was followed by gradually increasing pyrexia, the practice which he had followed, viz. to let out the blood, was the right one. But the majority of cases of hæmatocele got quite well under expectant treatment.

Dr. AMAND ROUTH thought there was no doubt that in this particular case Dr. Phillips had done right in first aspirating, and then making a free incision into the presenting tumour *per vaginam*. The bulging of Douglas's pouch downwards proved that adhesive peritonitis had ensued above, and that serous effusion, probably the result of serous perimetritis, had followed. An incision into the tumour *per vaginam* was therefore less dangerous than an abdominal section, because, in the former

operation the general peritoneal cavity was not interfered with.

Dr. CHAMPNEYS said that in cases where it was necessary to open a hæmatocele it was certainly best to do as Dr. Phillips had done,—to open freely, drain, and use all antiseptic precautions. Much of the bad results in the past were, he thought, due to aspiration without free opening and drainage, septic matters being introduced into the sac without free escape.

NOVEMBER 2ND, 1887.

G. ERNEST HERMAN, M.B., Vice-President, in the Chair.

Present—30 Fellows and 3 Visitors.

Books were presented by Dr. Cullingworth, Dr. Matthews Duncan, Dr. Wasseige, Dr. West, Dr. Le Page, Messrs. Adlard and Son, Royal Medical and Chirurgical Society, the Clinical Society of London, the Medical Society of London, the New York Academy of Medicine, and the Medical and Chirurgical Faculty of the State of Maryland.

Frederic William Hewitt, M.D.Cantab., was admitted a Fellow of the Society.

Henry S. Baumgartner, M.B.Durh. (Newcastle-on-Tyne); Herbert C. Rowbotham, M.R.C.S. (Melbourne, Derby); and A. Primrose Wells, M.A.Cantab., L.R.C.P. and S.Ed. (Douglas, Isle of Man), were declared admitted.

The following gentlemen were elected Fellows of the Society:—Henry Frederick Bailey, M.R.C.S. (Lee); Oswald Baker, L.R.C.P. and S.Ed., Surgeon-Major Indian Army; William Case, M.R.C.S.; A. D. Leith Napier, M.D.Aber.; R. Alexander Shannon, L.R.C.P.Ed. (St. Mary Cray); William Edmund Thomas, L.R.C.P.Ed. (Bridgend); and Charles Rebert Williams, M.B., C.M.Ed. (Ashby-de-la-Zouch).

CASE OF CONGENITAL HYDROCEPHALUS COMPLICATING LABOUR.

By G. Mallack Bluett, M.D.

The mother of this child was admitted into the General Lying-in Hospital on October 19th. On examination the abdomen was found to be of an unusual globose shape, projecting in a marked way from the trunk, and somewhat pendulous. The abdominal walls were thin and œdematous, tightly stretched over the uterine tumour, the greatest girth being forty-three inches. The probable but uncertain diagnosis was multiple pregnancy, as a much larger mass was felt at the fundus than that which appeared to occupy the lower uterine segment. The membranes had ruptured previous to admission, the os being dilated to a diameter of one and a half inches. The presentation, which could only be reached by passing the whole hand into the vagina, was found to be breech. Labour progressed very slowly, pains feeble and infrequent, the uterus being apparently inert from over-distension. The os became fully dilated about twenty hours after admission, the breech having engaged but made very little progress. Some three hours after this the breech became impacted, and the patient's condition not being satisfactory Dr. Bluett brought down the legs and the posterior arm; he had considerable difficulty with the anterior, which became extended behind the occiput and over the pubes. Then came delay with the head, which although well flexed, would not pass the brim. The forceps slipped off, and must only have seized the sides of the face as they locked, and the handles met. Bimanual examination showed that the uterus was still very large, and that its contents were in connection with the child's head. Oldham's perforator was applied to the ear, when a gush of fluid immediately came, but no brain substance; even when all the fluid was apparently pressed out the skull

would not collapse, so that Dr. Bluett had to apply the cephalotribe and deliver, the skull collapsing without any fracture of the cranial bones. The child was full-time and otherwise perfect, measuring twenty-seven inches in length, and weighing with the head full of spirit fifteen pounds. The mother made an uninterrupted recovery, and there was nothing in her previous history to note, except that her size at quickening did not agree with her calculations. The skull when distended to its fullest extent contained four and a half pints of fluid, the measurements being as follows:

Occipito-frontal circumference	. .	27¼ inches.
Sub-occipito-bregmatic circumference	.	24½ „
Biparietal diameter	. . . .	8¼ „
Bitemporal diameter	. . . .	6½ „
Occipito-frontal	. . . . .	8½ „
Occipito-mental	. . . . .	9 „
Sub-occipito-frontal	. . . .	7½ „
Sub-occipito-bregmatic	. . .	7 „

The fluid collected from the skull was alkaline, slightly albuminous, and had a specific gravity of 1010 with the merest trace of sugar.

I cannot find recorded a congenital skull of such a size. Budin mentions one giving the measurements of the occipito-frontal and occipito-mental diameters as 5·1 and 6·7 inches respectively, while the biparietal and sub-occipito-bregmatic were each four inches.

HÆMATOMA AND HÆMATOSALPINX.

By W. S. A. Griffith, M.B.

Dr. W. S. A. Griffith exhibited a specimen of hæmatometra and hæmatosalpinx, the uterus containing a small triangular clot which extended along both Fallopian tubes, projecting a couple of inches from the fimbriated extremity of one of them.

The specimen was taken from a single nulliparous girl aged 18, who died at St. Bartholomew's Hospital from uncontrollable epistaxis and uterine hæmorrhage. No history of hæmophilia could be obtained. The source of the hæmorrhage could not be determined certainly by the microscope. The mucous membrane of the Fallopian tubes, with its epithelial lining, was intact, whilst the mucous membrane of the uterus showed only such a denudation of epithelium as might have resulted twenty-four hours after death in hot weather.*

Dr. Griffith stated that besides being of value in demonstrating the retention of blood in a nulliparous uterus with no apparent obstacle to its outflow, the specimen illustrated the pathology of one cause of hæmatocele, namely that due to reflux of blood from the uterine cavity along the Fallopian tubes, or due to hæmorrhage direct from the Fallopian tubes. There was no hæmatocele in this case, but a little more hæmorrhage would have caused one.

PYOMETRA.

By W. S. A. Griffith, M.B.

Dr. Griffith also exhibited a specimen of pyometra (No. 2955, St. Bartholomew's Hospital Museum) as an illustration of the occlusion of the cervix by the pressure of a fibroid, the condition which probably caused the enormous hæmatometra in the case to be read by Mr. Meredith that evening.

It is described as follows in the Museum catalogue:—A uterus in the side wall of which a large fibroid is embedded. The tumour has bent the uterus laterally, and so encroached upon its cavity that the cervical canal was shut off from the body; a piece of glass now shows their continuity. The cavity of the body of the uterus, which is greatly dilated, was

* St. Bartholomew's Hospital Museum, 2934ᴬ.

filled with pus, its walls are thin and its mucous membrane intensely vascular.

Dr. Griffith stated that the circumstances which produced pyometra or hæmatometra after occlusion of the cervix were not certainly know. From the specimens and cases he had seen, it appeared that generally, whatever the cause of the occlusion, if it occurred before the climacteric hæmatometra was the result, if after, pyometra.

Dr. Braxton Hicks though it would be well, in discussing the cases of apparent pyometra, to be sure whether pus really was within the uterus, and instanced a case where, the vagina having been closed during pregnancy only, at the seventh month, labour coming on, the vaginal closure was opened, and pyoid fluid escaped, which he thought could be only the retained secretion of the canal above the closure.

Dr. Routh said that some years back he had had a case of pyometra in the Samaritan Hospital. It was a peculiar case. The girl, about 15 or 16, had never menstruated; in fact, she had an imperforate hymen. The uterus projected above the pubes, and every month there was an exacerbation of pain as if she were going to menstruate. The hymen was opened, and about half a pint of muco-pus exuded. Whether the inflammatory symptoms began in the vagina and extended to the uterus, or *vice versâ*, he could not say, but the girl ultimately did quite well.

Dr. Godson mentioned the case of a woman, aged 42, who was under his care in St. Bartholomew's Hospital in 1879 with an abdominal tumour, reaching about an inch above the umbilicus, which on bimanual examination was found to be the enlarged uterus. She stated that her last confinement, two years and two months previously, was a very severe one, the fœtus being in a state of decomposition, and removed with instruments in pieces. She had inflammation afterwards, and was seriously ill. She had not menstruated since, but had severe pains every month, worse than labour. No os uteri could be felt, and *per speculum* none could be seen, but there was a cicatrix running across the cervix; a spear-shaped knife was thrust through the centre of this, and subsequently a uterine probe, which entered the cavity of the womb, and allowed a large quantity of treacly fluid to escape, and in a short time the abdominal tumour disappeared. On three different occasions, at long intervals, the patient was afterwards seen, the last time in 1885. The symptoms and conditions were always the same: severe uterine pain, the enlarged uterus, and atresia of the os uteri. No incision was, however, again made, the contents of the uterus finding an

escape in course of time on each occasion. The quantity discharged was generally estimated at about two pints. The patient had lately been seen, suffering from diabetes, but was quite well in other respects, menstruation having ceased. The atresia still existed.

In reply to Dr. Braxton Hicks, Dr. GRIFFITH stated that in the only fresh specimen of pyometra he had examined, which followed occlusion by cancer, the fluid was undoubtedly pus, and the mucous membrane presented the characters of destructive inflammation.

CASE OF ATRESIA OF THE UTERINE CERVICAL CANAL. DISTENSION OF THE UTERUS. ESCAPE OF THE MENSTRUAL FLUID BETWEEN THE WALLS OF THE VAGINA.

By George Lowe, F.R.C.S.

(Received March 19th, 1887.)

January 25th, 1879.—S. A. B—, fifteen next April, began to menstruate eight months ago. Three weeks later she menstruated a second time, five weeks later a third time. After this there was no return of the menses for five months. However, according to the mother's account, a fortnight previous to the present date, her daughter again menstruated though with much pain, the discharge being natural in appearance and quantity. The pain was described as bearing down, and coming and going. This pain continued for several days, when the girl suddenly shouted to her mother, "Oh! mother, there is something coming." Alarmed, the mother sent for her usual medical attendant, Mr. Hamilton, of Swadlincote, who found on examination a small tumour in the left wall of the vagina, and above it a large firm tumour filling up the whole pelvis, and extending half way to the umbilicus. The case being obscure, Mr. Hamilton asked me to meet him in consultation.

On our seeing the patient she was observed to be slightly pale, of fair complexion, and sufficiently well nourished. There was no sickness nor had there been any from the beginning. The tongue was clean, the pulse quiet. There was no difficulty or pain in micturition or defæcation, the recurrent and expulsive pain, and the abdominal distension being the only prominent symptoms. On separating the

labia, a tumour was seen projecting from the left wall of the vagina. It was covered with the vaginal rugæ, was conical in form, and of the size of the smaller end of a pheasant's egg; it suggested the idea of a nipple shield, obtusely swollen at the base and circumference, and abruptly developing a nipple-like projection from the centre. The surface was not inflamed, nor was it at all sore to the touch or painful on pressure. It was evidently full of fluid, fluctuation being most distinct. It was reducible, that is, on firm and equal pressure it disappeared. On the pressure ceasing the tumour immediately reappeared. A more complete examination was made under chloroform. Above this special tumour (imperfectly described) the vagina was found to be blocked by a large tumour continuous with the abdominal tumour, as was ascertained by examination *per rectum*. The expulsive character of the pain was very evident even when the patient was completely under the influence of chloroform.

The large tumour was not thought to be connected with the vaginal one till it was found that pressure on the abdomen made the vaginal tumour more tense, and that so long as the pressure was maintained it could not be reduced. On puncturing it more light was thrown upon the case, for a thick, dark, treacle-like, inodorous fluid escaped. It continued to escape for some minutes, when the flow ceased. On inspection, a string-like substance was seen to hang from the small opening and to close it. This string-like substance had sufficient tenacity of structure to allow of its being drawn out for some length, and even to be wound round the two index fingers. On coming to the end of it the fluid again flowed freely. The puncture was slightly enlarged. The fluid escaped in larger quantity, and the abdominal tumour became less tense. No cervix uteri could be felt. High up, however, and posteriorly a small pit or depression could be felt, the edge or lip of which could be caught up by the finger-nail. A small elastic female catheter could be passed for about two inches, but no discharge escaped through it.

The patient kept her bed till all discharge ceased.

About three months after our former consultation Mr. Hamilton and I saw her again. To our common surprise, the uterus was found to be, both as to size and position, perfectly natural, and the cervix restored to its normal condition. The girl apparently was quite well. Some years later I again asked after the patient. Mr. Hamilton told me she had married and had a child.

Remarks.—At first this was thought to be a case of double uterus; one half of which, having no cervical canal, and becoming gradually filled by the menstrual fluid, closed by pressure the cervical canal of the other. The progress and termination of the case do not support this view, and another theory must be suggested, viz. that of the case being one of simple atresia from possibly temporary obstruction by membranous clots. The vermiform or string-like clots, which closed the small opening made by puncture, seem to warrant such an opinion. The distension of the uterus increasing, ulcerative absorption of tissue and consequent perforation ensued, allowing an escape of the pent-up fluid into the structure of the left wall of the vagina. Here the fluid, forced on by uterine contraction, probably found its way between the muscular and fibrous coats of the vagina, until its further descent was arrested by the sphincter vaginæ. Now the uterus would seem by a strong effort to have caused the fluid to burst through the structures, between the fibrous coat and the mucous membrane, and, pushing the latter before it, gave rise to the nipple-like protrusion, and to the feeling of "something coming."

It has been suggested that the abdominal tumour might have been a pelvic hæmatocele. The absence of all early acute symptoms; the markedly characteristic nature of the discharge; the expulsive action of the uterus, even when the patient was completely under the influence of chloroform, appear to negative such a supposition.

Dr. HERMAN thought the case just related was extremely like one of unilateral hæmatocolpos, that is, of double uterus and vagina, one vagina being imperforate, and the secretion of the

corresponding uterus accumulating in it, while the patient menstruated through the other. He observed that although it was stated that no cervix uteri was felt, yet that there was a canal into which a probe passed two inches; this, he thought, he should have taken to be the uterine cavity. Shortness of the vaginal portion, together with stretching of the vagina, would account for the cervix not being felt. Diagnosis in such cases was often difficult, for the imperforate vagina was sometimes closed for a part of its length (he had had a case under his own care in which this was so), the corresponding half of the uterus often presented abnormality in its development, and the relations and characters of the parts were altered by distension. In Mr. Lowe's case what he (Dr. Herman) in his own case took to be the closed vagina was pervious down to the vaginal orifice.

HYDROCEPHALUS AS A COMPLICATION OF LABOUR.

By Joseph Griffiths Swayne, M.D.,
CONSULTING OBSTETRIC PHYSICIAN TO THE BRISTOL GENERAL HOSPITAL AND LECTURER ON MIDWIFERY AT THE BRISTOL MEDICAL SCHOOL.

(Received March 30th, 1887.)

Hydrocephalus as a complication of labour has not, I think, received a due amount of notice, either in our ancient or modern text-books of midwifery. It renders labour difficult, and, if not properly recognised and promptly treated, extremely dangerous. But yet in most obstetric works it is dismissed in a few short sentences, and does not receive that amount of attention which its importance deserves. I propose, therefore, to give, as briefly as possible, my own experience of this complication, and to offer a few remarks about its diagnosis and treatment. The rarity of hydrocephalus during labour may perhaps account for the slight notice which it has received from obstetric authors. According to the statistics of Madame La Chapelle, derived from notes of 43,545 deliveries, only one case of hydrocephalus is met with in about 2900 labours. According to Dr. Galabin it is still rarer; for in the Guy's Hospital Charity, perforation by puncture on account of hydrocephalus was called for only once in 23,591 cases.* I have met with seven cases of it in my own practice, six of these being consultation cases, whilst in only one was I the original attendant. I will give these cases in the order of occurrence.

* The late Dr. Churchill, of Dublin, does not record a single case of hydrocephalus in 2547 labours attended by him in private practice.

CASE 1.—On March 29th, 1854, I was sent for by Mr. Homfray (one of my pupils at the Medical School) to see a primapara, Emma B—, living in Bryant Street, Redcliffe Square. He told me that the first stage of labour had been long and tedious, that the waters came away on the previous evening, and that he sent for me because she had become very restless and difficult to keep in one position. On examining, I found the head pressing down so low as to touch the perinæum; the presenting part being soft and tumid. As there were no urgent symptoms present, I left her and returned in about three hours, thinking that by that time the labour would be nearly over. I found, however, that the child's head was in the same position as when I left, and on examining more carefully I discovered that it was hydrocephalic, principally from the width of the sagittal suture. The head was so firmly fixed that I could not press it back between the pains, and though the vertex was at the pelvic outlet no ear could be felt. After staying about two hours, finding that no progress was made, although the pains were strong, and that the pulse was much feebler and quicker, her manner being very restless and excited, and her general condition critical, I determined to puncture the head. Accordingly, I made an opening about half an inch in length, with Smellie's scissors, in the sagittal suture. At least a pint of fluid gushed forth almost immediately; the skull collapsed, and notwithstanding every care a considerable quantity of brain came away. I then inserted my forefinger into the opening, and, by drawing down the head, in concert with the pains soon effected delivery. The child, which was stillborn, was a female and of average size. The pressure against the pelvis had caused extensive ecchymosis around the left eye, and also a fracture of the right parietal bone. Some hæmorrhage accompanied the expulsion of the placenta, but was easily controlled by pressure. After delivery the patient appeared much exhausted. Her pulse was very weak and had risen to 142. I gave her ℥xxv of Tinct. Opii. On the following day she was much better, and ultimately made a good recovery.

CASE 2.—In 1856 I attended Mrs. K—, a patient of Mr. Hamilton's. As he was out of the way and could not be found, I was sent for in a hurry. On arriving I found the child's head born and covered by the membranes; the body soon followed, and afterwards the placenta. She told me that she wanted at least five weeks of her proper time, and the size of the child's body corresponded with this age. The head, however, was larger than that of a child at full term, and measured sixteen inches in circumference around the forehead and occiput. The sutures, especially the sagittal, were very wide, and the head evidently contained water in considerable quantity. The child was also the subject of hypospadias. It survived its birth but a short time. The mother did well.

CASE 3.—I was sent for in 1856 by Mr. Willey, one of my pupils, to see a patient he was attending, because he was puzzled as to the nature of the presentation. On examining, I felt the bones of a fœtal cranium, with a soft fluctuating tumour attached to them, which gave me the idea of an encephalocele. Delivery soon took place naturally, when it appeared that the child was a fœtus of about seven months, with hydrocephalus. It had apparently been dead for some time. The head was very soft and yielding. The mother did well.

CASE 4.—On February 26th, 1867, I was sent for about 11.30 p.m. to see Mrs. B— at the Turkish Baths in her third confinement. For some days before labour she had felt very uneasy, and had a fixed idea that the child was "too large to pass." Labour commenced on the previous day. The forcing pains of the second stage set in on the morning of the same day. At 5 p.m. the membranes gave way, and since then the os uteri had been tolerably dilated. When I examined it was not quite fully dilated, and the pains were not very strong, although Dr. Belcher, the practitioner in attendance, had previously given ergot. On first examining, the presenting part felt soft and puffy, like the nates,

for which Dr. Belcher had taken it; but it was rounder, and I could feel on or two cranial bones. To make the presentation out more clearly, I passed up all the fingers of the left hand and found the head fully occupying, and arrested at, the upper strait of the pelvis. The sutures were very wide, and a distinct fluctuation could be felt. No ear could be reached. I accordingly perforated the head, and let out a great quantity of fluid. By passing my finger into the opening, I soon hooked down the head and delivered a stillborn male child. The mother did well.

CASE 5.—On May 12th, 1867, I was called between 8 and 9 a.m. to attend Mrs. W—, Redland House. She had had eight children previously. The labour had begun on the previous day but had made little progress. The membranes ruptured at 8.45 a.m.; very violent pains then came on, and increased in strength until 9.30 a.m., when the child was born. It was a boy, and very large. The head contained water, and measured sixteen inches in circumference. The great fontanelle was very large, extending from the vertex behind to the root of the nose in front. There was also spina bifida, but the child seemed tolerably strong. The forehead presented and emerged first, behind the pubic arch. She complained of a great deal of pain after delivery, as soon as the effect of the chloroform given her during labour had gone off. About a quarter of an hour after delivery I removed the placenta, which had been expelled into the vagina. It was of a battledore shape, and came away easily, but appeared small for the size of the child. There was some slight hæmorrhage. I stayed with her two hours, because she complained of severe pain extending to the epigastrium, accompanied by a peculiar pulsation in the umbilical region. I then gave her an opiate. About two hours after this she became very prostrate, the pain still continuing. There had been no visible hæmorrhage, but fearing that it might be internal, I introduced my hand into the uterus and removed what appeared to be a placenta succenturiata, about the size of the palm of the hand, which

was still adherent to the uterus, and also a clot or two. Notwithstanding an abundance of stimulants which had been given her, she became more prostrate, and died at 3.30 p.m., six hours after delivery. From the symptoms present I felt convinced that a partial rupture of the uterus must have taken place, and requested a post-mortem examination, but unfortunately my request was not granted. The child never took food satisfactorily, and died about a fortnight afterwards.

Case 6.—On April 15th, 1871, Mr. Phelps asked me to see Mrs. W—, 15, Park Street. She had had four children previously, all healthy. On examining her, I felt a bag presenting just like the tense bag of the waters, which after a time, however, I made out to be the head. The sagittal suture was so wide that scarcely any cranial bones could be felt, and these were high up and apparently in contact with the brim of the pelvis. In the intervals of the pains I could pass my fingers underneath the cranial bones. The patient's condition was good. She had felt slight pains since the 9th (six days before), but active labour only began at 2 a.m. the same day. The membranes gave way at 11.30 a.m., just after Mr. Phelps arrived. I at once punctured the head, and let out a large quantity of fluid. The child, a male, was stillborn, and had an enlarged abdomen from cystic disease of the kidneys. The mother suffered a good deal from very severe after-pains, but otherwise recovered favourably.

Case 7.—On September 29th, 1875, Mr. Baretti asked me to see a patient of his, a primipara, aged 25, whom he was attending in Belle Vue Crescent. She had been in labour some hours, and the os uteri was nearly fully dilated. By using the fore and middle fingers of the left hand, I could just feel something hard, but what I could not say, high up above the pubes. In order to make sure, when the os was fully dilated, and she was fully under the influence of chloroform, I introduced my left hand and was

then able to feel, just above the upper strait, a large head, in the ordinary position, but quite unable to enter the pelvis. The sutures and fontanelles were very wide. As it was evidently a case of hydrocephalus, I punctured the head in the posterior fontanelle and let out a large quantity of water. The head then collapsed, and much brain came away. By pulling the flaccid scalp, I easily brought down the head, and she was soon delivered. The child gasped a few times after birth, but soon died. We found by measurement that there was more than a quart of water within the cranium. The patient did well.

The dangerous nature of this complication of labour is abundantly proved by the statistics which have been given by different authors. In the seven cases just related, there was one death, presumably from ruptured uterus. Dr. Lee, in his 'Clinical Midwifery,' gives five cases, in three of which the mothers died; two of them in consequence of rupture of the uterus. That this is the most frequent cause of death is proved by the statistics collected by Dr. Thomas Keith, of Edinburgh; rupture of the uterus having occurred in sixteen out of seventy-four cases of intra-uterine hydrocephalus. The cause of this is, no doubt, the great stretching which the lower part of the uterus undergoes in consequence of the large size of the fœtal head, and the very great difficulty with which, from the same cause, the retraction of that part is effected. This we can readily understand, when we consider that the circumference of an ordinary fœtal head at full term, when measured round the forehead, occiput, and parietal eminences, is not more than twelve or at most thirteen inches; whereas hydrocephalic heads have been known to measure as much at birth as twenty-three inches, as in a case related by Burns, or even thirty-two inches, as in one recorded by Wrisberg. It is true, however, that sometimes a hydrocephalic head may be born as easily as an ordinary one. This happened in Cases 2 and 3 related by me. But there the children were more than a month before the full time, the circumference of the

heads was not more than sixteen inches, and the readiness with which such heads could be moulded more than compensated for their increased size. To a certain extent this moulding process renders the labour more easy, but when the dimensions of the head are excessive it renders the labour more painful and dangerous. The head descends to a certain extent into the pelvic cavity, and will then go no further, but comes to a deadlock. This happened in a very marked manner in the first of my series. The vertex had descended as low as the perinæum, but yet the base of the skull remained so high that I could reach neither ear. The head completely filled the pelvic cavity, and was so firmly jammed into it that I could not repress it between the pains. In such a state of things most injurious pressure is made on the pelvic vessels and nerves, whilst at the same time the lower portion of the uterus is excessively stretched. Hence arise the pain, discomfort, and restlessness between the uterine contractions which is so marked in cases of hydrocephalus.

In ordinary cases of deformed pelvis, where the head is of the usual size, this does not happen, the chief pressure being exerted on one or two points, such as the promontory of the sacrum or the pubic symphysis; whilst the pelvic vessels and nerves, from their situation on each side of the sacral promontory, escape this undue pressure, and the circulation is not interfered with in the same way. For the same reason also, sloughing of the soft parts is more likely to happen in a protracted case of labour with hydrocephalus than in a case where the length of the labour is due to deformity of the pelvis. Even if there be no arrest of the hydrocephalic head, rupture of the uterus may take place, if the labour pains are very violent, as in Case 5. Hence, one can readily understand the extreme peril of giving ergot in such cases.

In consequence of all that I have mentioned with respect to the risks of labour when there is hydrocephalus, it will readily be understood that the prognosis is not invariably favourable. The maternal mortality has been reckoned to be

as much as one in four. "But," as Dr. Galabin has well observed, "there is little danger if the case is early recognised and treated. The risk lies in its nature being overlooked. The child generally perishes, and in any case is not capable of prolonged life."*

In the management of these cases everything depends upon a correct diagnosis. When once it is formed, the treatment is simple and easy enough. In forming a correct diagnosis, we have to trust to a number of signs, which have been well described in most obstetric works. But yet the diagnosis is not so easy a matter, as the descriptions in such works would lead us to believe. There are occasional exceptions to some of the signs, and again others are often not readily obtainable. It is usually stated that the head remains above the brim, even after the first stage is over; that it is much larger and softer than an ordinary head, that it becomes tense during a pain and flaccid in the intervals. The hydrocephalic head is distinguished from the bag of the waters by our being able to feel the separate cranial bones and, if the membranes are ruptured, the hairy scalp. In the intervals between the uterine contractions, the broad fontanelles, the thin bones and the wide sutures are readily felt. The sagittal suture is sometimes so broad that the point of the finger can be passed between the parietal bones, and even slightly underneath them. But, notwithstanding all these signs, it is, as Dr. Playfair remarks, "a matter of fact that the true nature of the case is comparatively rarely discovered before delivery; thus, Chaussier found that in more than one half of the cases he collected an erroneous diagnosis had been made."† Why is this? Because, in the greater number of cases the head is so large that it will not readily enter the pelvis and, consequently, it is difficult to get most of the signs above enumerated by an ordinary digital examination. Sometimes, indeed, the head is so high that no presentation can

* Galabin's 'Manual of Midwifery,' p. 453.

† Playfair's 'Science and Practice of Midwifery,' vol. ii, p. 44.

be felt by an ordinary digital examination, although the os uteri is fully dilated. When this is the case and there is no pelvic deformity, we may be pretty sure that one of two things is present, either there is a transverse presentation, or the head is enlarged from hydrocephalus; except, perhaps, in those rare cases where there is a double monstrosity of some kind. As a general rule, the head remains high in hydrocephalus, but still it is not correct to say that "the head is always arrested above the brim."* In my first case, the head was not arrested until the vertex was as low as the perinæum. I was thus misled, and for some time believed it to be a case of ordinary labour, until a more careful examination fully revealed the true nature of the case. Whenever there is a suspicion of hydrocephalus, we should not rest contented until that suspicion is converted into a certainty. To do this it is often necessary to examine, not with one finger only, but having brought the woman fully under the influence of chloroform, to introduce the whole hand into the vagina, whilst the other hand is placed upon the hypogastrium. With the hand in the vagina, we can examine thoroughly both the sutures, fontanelles, and general contour of the head, whilst with the hand on the abdomen we can very accurately estimate the exact size of the head; making, in fact, a bimanual examination of the most complete character.

In a considerable proportion of cases, as many, it is said, as one in five, the fœtus presents by the breech. The diagnosis is then rendered still more difficult, for it is impossible, in most instances, to discover the enlarged sutures and fontanelles at all; and the only means we have of forming a correct diagnosis is by making a complete bimanual examination, such as I have just described.

With regard to the treatment of hydrocephalus complicating labour I may say that there is no kind of difficult labour, in which the expectant midwifery, so prevalent in the early part of the present century, is so much to be deprecated. I have seen the most disastrous results pro-

* Playfair's 'Science and Practice of Midwifery,' vol. ii, p. 44.

duced by delay in these cases. I remember, when I was commencing practice, having to make a post-mortem examination of a woman who died shortly after labour. The practitioners who attended were blamed by the relatives; a coroner's inquest was held, and my father had to give evidence. The woman had been many hours in labour, and had been attended by a neighbouring practitioner and his partner. Neither of them had recognised that the child was hydrocephalic. After many hours of intense suffering there was a sudden gush of water, followed almost immediately by the expulsion of a collapsed head. But this happened too late to save the patient. She died a few hours afterwards in a state of extreme exhaustion. I found at the post-mortem that the child, which had been apparently dead for some hours, had spina bifida, as well as hydrocephalus, that the spinal tumour had given way owing to commencing putrefaction, thus allowing the water in the head to drain off. I found also extensive inflammation, and appearances of commencing sloughing in the lower part of the uterus and vagina of the woman. The coroner's jury absolved the two attendants from blame, on account of the extreme rarity of hydrocephalus.

There is a case published in the 'American Journal of Obstetrics' for November, 1886, which shows the disastrous effect of using the forceps to overcome obstruction occasioned by hydrocephalus. Dr. Marx, of New York, found the patient, a multipara, in the second stage of labour, the sacral promontory projecting more than usual, and the head remaining many hours above the brim, notwithstanding "strong pains which were intensely painful." Pulse 100, and temp. 100°. Owing to her condition and the threatened death of the child Dr. Marx attempted to deliver with Simpson's forceps. He says: "The delivery proved difficult, and more force was applied than was safe, either to mother or child. After traction of ten minutes the forceps were removed, but the head had not perceptibly moved." He then adds, "Knowing how difficult the labour would be, I favoured perforation and extraction, but was met with a

stern refusal by my colleague. Argument did no good: I had an extreme conservatist to deal with. Placing the woman on the right side, the forceps were again applied, direct backward traction made, and after about twenty-five minutes the head passed the contracted portion with an audible snap." The child when delivered was strongly asphyxiated. The head was found to be hydrocephalic and had a circumference of 37·5 centimetres. It was much cut, bruised and injured by the forceps, and the child died on the sixth day with symptoms of acute meningitis. The mother died on the third day in a state of extreme collapse with intense abdominal pain and tympanites. No post-mortem was allowed, but Dr. Marx attributed her death to ruptured uterus.

The case just related shows very forcibly the extreme danger of increasing the *vis a tergo* by the forceps when we have hydrocephalus to deal with, and yet treatment of this kind is recommended by so judicious and yet so bold a practitioner as Dr. Blundell. In his 'Obstetric Medicine,' Dr. Blundell prefaces the short remarks which he makes on the treatment of hydrocephalus by the usual caution: "Meddlesome midwifery is bad," and then goes on to say, "Give therefore a trial to those natural efforts which by the wise accoucheur are never hastily distrusted. The natural efforts failing, puncture the head, should the lever or forceps have been previously tried without success. Under these natural efforts when the pains are strong, the cranium sometimes bursts open; or the spaces between the sutures being large, the head may become compressed, and notwithstanding its extraordinary bulk, may unexpectedly emerge." I have above expressed my opinion very strongly against such temporising. If we wait for the head to burst and give exit to the water we shall probably have to wait until the child is dead, and until the woman is in such a state of powerless labour that she will die also. The enlarged head is the sole cause of the difficult labour, and the sooner this cause is undoubtedly recognised and removed by reducing the bulk of the head the better. As soon as the

os uteri is well dilated, the head should be punctured, and the fluid allowed to escape. The head then collapses, and the rest of the labour is accomplished *citò, tutè, et jucundè.* It is not even necessary, I think, to wait until the head is arrested before proceeding to puncture. I have often regretted that I did not act thus in Case 5, although the labour was making rapid progress. Had the bulk of the head been thus reduced the woman would have been spared the very violent pains which ensued towards the end of the labour, and which were presumably the cause of the ruptured uterus.

After the head has been opened the natural powers are generally sufficient for its expulsion, or if they should not be it is very easy to pass the forefinger through the opening in the scalp, and with it to exert a sufficient amount of traction. I have never found it necessary to use crotchet or craniotomy forceps; still less is it necessary to turn after puncturing the head as Lusk and Schroeder have recommended. As Dr. Playfair well remarks, "This seems a very unnecessary complication of an already sufficiently troublesome case." To tap the head is the one thing needful; a small puncture is sufficient. This may be done by Smellie's scissors, but to afford a better chance of saving the child it is usually recommended to employ a fine trocar or even an aspirator. This is not a matter of much consequence, for the accumulation of fluid being usually in the ventricles a small portion of brain must necessarily be wounded, and the usual result is that when the head collapses portions of the softened brain will be pressed out through the opening. Nevertheless, children are occasionally saved in this way, to live for weeks or even months. But *cui bono?* I recollect one case of this kind in which I tapped the head several times after birth, with temporary good results, but in the end the child died of exhaustion when about six months old. I remember also another case in which the head was not tapped, and the child managed to exist for twelve months. At that time the head was as large as a full-grown man's, but the body had scarcely in-

creased in size since birth. The child could not raise its head off the pillow, but lay upon it with its eyes shut, and with no sign of intelligence, merely able to sleep, to cry when hungry, and to swallow. Surely such a life as this ought not for a moment to come into competition with that of a woman in the prime of life, who is fulfilling the duties of a wife and mother. Although every conscientious practitioner has the greatest possible repugnance to sacrificing the life of an ordinary infant to save that of the mother, yet it would, I think, be the height of sentimentality to be scrupulous about taking away, if necessary, that of one which in all probability is never likely to develop into a reasonable and responsible being.

Dr. PLAYFAIR said that while he fully endorsed all that had been said as to the importance of the subject of the paper, he must take exception to the statement that it had been insufficiently treated in all modern text-books. In the later editions of his own work, at least, it had been fully considered, possibly not at very great length, but with a full recognition of its risks. Moreover, he had pointed out the precise dangers and advocated the same rules of treatment as those which had been dwelt on by the writer of the paper. There was nothing which he had said which he had to criticise. He thought that perhaps he had not laid sufficient stress on the peculiar character of the uterine contractions in cases of intra-uterine hydrocephalus, which often might lead to a suspicion of its existence and to its early diagnosis. These were the peculiarly violent, almost tetanic, pains which resulted from the vain efforts of the uterus to make the presenting head engage in the pelvis. When, from the experience of former labours, or actual measurement, the dimensions of the bony pelvis were known to be normal, and yet the head refused to enter the brim in spite of strong and violent pains, then the existence of hydrocephalus should certainly be suspected. No time should be lost in thoroughly anæsthetising the patient, and passing in the whole hand with the view of exploration. This would certainly lead to a recognition of the difficulty, and possibly to the prevention of disaster, by early puncture of the head. One of the very worst cases he had ever had to deliver arose from a neglect of this rule. The practitioner in attendance had felt the head, but did not ascertain the reason of its non-engagement. He had unfortunately turned, and the head had receded to the fundus. The result was that perforation was accomplished with very great

difficulty, the point of the perforator having to be introduced deeply into the uterine cavity without sufficient guide or protection to the soft parts. Fortunately it struck the distended head, and a gush of fluid happily terminated the difficulty. Probably original footling cases would be more difficult to deal with, but not so dangerous, as head cases, since the body would readily pass, and the risk of rupture of the uterus would be less. For the same reason it was probable that the peculiar strong expulsive contractions he had described would be absent. This seemed, at least, to have been the case in the instructive history which had been given with the specimen laid before the Society by Dr. Bluett.

Dr. GERVIS wished also to emphasise the importance of the method of examination referred to by Dr. Swayne. Very frequently at examinations he had asked candidates how, in cases of suspected hydrocephalus, they would make quite sure of its presence before proceeding to operate, and very rarely, if ever, had the correct answer been given. He had also on several occasions been sent for in cases of difficult labour in which practitioners had failed in applying the forceps, and in which the cause had been unrecognised hydrocephalus. Dr. Gervis had also met with cases of severe injury to the vagina from the forcible delivery of hydrocephalic heads without the fact of the hydrocephalus having been previously recognised.

Dr. BRAXTON HICKS thought that the difficulty of making out hydrocephalus in labour mostly occurred in the extreme cases where, owing to the breadth of the bearing of the presenting part on the os uteri, and its softness, the pains were not so violent as where a portion had passed through the os and into the cavity of the pelvis; but in these extreme kinds the contractions of the uterus came slowly on, and the condition of trismus slowly supervened. He also entirely agreed with the author of the paper and previous speakers as to the advantages gained by introducing the whole hand into the vagina and os uteri if necessary, both in hydrocephalus, and in all cases of ambiguity (such as those of detention of the head at the brim when we are about to apply the forceps), so as to see exactly the want of relation between the head and brim. It was interesting to observe that in all these cases the head presented. The reason of the head most frequently presenting was stated by many authors to be that the upper portion of the uterus is larger than the lower, and as the body and limbs of the fœtus form a larger mass than the head, the body of the fœtus is, by the gentle contractions of the uterus, caused to occupy the fundus. This theory, however, seemed hardly to apply to these hydrocephalic cases, because in the more marked the head was much the larger portion, and therefore these ought to have been breech presentations.

Dr. GALABIN had met lately with a case in which unusual difficulty in the diagnosis of hydrocephalus resulted from a very slight development of the cranial bones, and a comparative absence of hair on the scalp. Perforation had been attempted, but the perforator had not penetrated the dura mater. So offensive a discharge from the dead fœtus, mixed with meconium, was present, that it was feared that the mother's intestines might have been injured. (The glistening, sloughy scalp did somewhat resemble intestine.) In this instance the bimanual method, with introduction of the whole hand into the vagina, easily revealed the large size of the head. In moderate degrees of hydrocephalus, in which the bones were highly developed, and the sutures not greatly widened, he had sometimes found the nature of the case revealed by the fact that the blades of the forceps were wide apart when applied, and easily slipped off, from the yielding nature of the head.

Dr. BOXALL, speaking with reference to the advisability of performing podalic version after evacuation of the fluid, said that, though he was willing to admit that in the majority of instances such a proceeding was unnecessary, yet he could quite conceive that in individual cases such a line of action might prove of great utility, and, moreover, on scientific grounds had something to recommend it. He alluded to those cases of hydrocephalus in which the head is enormously distended, and in which the bones at the vault of the skull are widely separated. Now, if resistance is offered to a parachute, it maintains its shape; invert it and it readily collapses. Precisely in the same way, if the bones of the presenting vertex be separated to such an extent as to form with the base of the skull a parachute, which meets with resistance at the pelvic brim, no reasonable amount of traction will avail. But if, on the other hand, turning be performed, and the base of the skull brought down first, the bones of the vertex, like the parachute, will fold up, even though, as in such a case as that which occurred at the General Lying-in Hospital, some further means might be required to assist the closure.

Dr. JOHN PHILLIPS said that Dr. Swayne had quoted Madame Lachapelle for his statement that hydrocephalus occurred once in every 2900 labours, and he believed that that was the generally accepted proportion. He had met with two cases in 4600 labours, one presenting by the vertex and the other by the breech. The former was complicated by acute hydramnios; the diagnosis was easy after rupture of the membranes, and perforation was followed by an easy labour. He had found that 7·5 per cent. of the total cases of hydrocephalus were complicated by hydramnios. In the breech presentation the vagina was very narrow and the head almost inaccessible; perforation could only be performed through the lower jaw and hard palate, and it was only after the

escape of the fluid that the nature of the case was explained. He was quite determined, should he meet with another similar case, to adopt the plan recommended by Tarnier, and cut into the spinal column as high up in the neck as possible, and draw the fluid off by means of a catheter.

Dr. HORROCKS remarked that the diagnosis of hydrocephalus was more difficult in head-last labours than in those cases where the vertex presented, because the bones of the base of the skull were not separated like those of the vertex. With regard to the frequency of hydrocephalus, it was more frequent in the Guy's Lying-in Charity during the period subsequent to the last report, but still fell a good deal short of that met with by Dr. Swayne.

Dr. W. GRIFFITH stated that it would conduce to the certain determination of the cause of the frequent presentation of the breech in cases of hydrocephalus, if those who met with these cases would take the sp. gr. of the hydrocephalic fluid, which in the specimen exhibited this evening by Dr. Bluett was 1010. The average sp. gr. of the fœtus was stated to be 1055, and that of the liquor amnii about 1010—1015. This difference would amply account for the floating of the head to the top of the amniotic fluid. Another factor might be the degree of development of the fœtus and its mobility in the uterus; if the disease attacked the head late in pregnancy when it was less moveable in the uterus, the head, naturally dependent, might remain so.

Dr. BLUETT (in reply to Dr. John Phillips as to the difficulty of perforating behind the ear, and his preferring perforating through the lower jaw and hard palate, or opening the spinal canal and letting out the fluid as described by Tarnier, and in reply to Dr. Boxall, who argued that the skull was more likely to collapse after perforation if version were performed) said that it was not difficult for him to perforate behind the ear in his case, as that point was well within reach, and it was much easier than going through the jaw and hard palate; also that the head would not collapse although he had the advantage mentioned by Dr. Boxall of having the trunk as a tractor.

Dr. HERMAN said that external palpation was of great value in these cases. It required some practice to ascertain the exact position of the child by external palpation; but it was quite easy to identify the head and roughly judge of its size. If this were done early in labour, the increased size of the head might be recognised before it was possible to introduce the whole hand into the uterus. A German writer* had directed attention to what he called the "Eindruckbarkeit" of the fœtal head, *i. e.* the extent to which, before or early in labour, it could be pressed down into the pelvis with the hands. If the pelvis were large or the head small it could easily be pressed far down; but if the

* Brühl, 'Arch. für Gyn.,' Band xxvi.

pelvis were small, or the head abnormally large, it could not be pressed into the pelvis at all. He (Dr. Herman) believed this manœuvre was of service in forming a prognosis as to the ease or difficulty of labour. If applied in cases such as those under discussion, the presence of a condition entailing difficult or impossible delivery would be at once recognised.

A CASE OF HÆMATOMETRA ASSOCIATED WITH A DEGENERATING FIBRO-MYOMA, TREATED BY SUPRA-VAGINAL HYSTERECTOMY.

By W. A. Meredith, M.B., C.M.,
SURGEON TO THE SAMARITAN HOSPITAL.

A. R—, a single woman, aged 46, was admitted under my care at the Samaritan Free Hospital in December, 1886, suffering from a large abdominal tumour.

The following history was obtained from the patient:—Menstruation began at the age of thirteen, and was normal from the first, the flow usually lasting from three to four days, until about twelve years ago, when she noticed that it was increasing in amount and duration. Shortly after this, a hard swelling was discovered low down in the abdomen, which thenceforth steadily enlarged as the monthly losses grew more and more free, amounting finally to severe attacks of flooding, from which the patient suffered during the next seven years.

In April, 1883, two weeks after the cessation of the monthly flow, which as usual had persisted profusely for a period of ten days, she was seized with an attack of pleurisy in the right side, and confined to her bed for the next eight weeks. During this interval there was no return of menstruation, which in fact ceased entirely from that date. Throughout this illness she suffered greatly from abdominal pain and tenderness.

Some few months later she was again laid up for several weeks by a severe attack of abdominal inflammation, accompanied, as on the former occasion, by forcing pains of an intermittent character, described as starting from the loin and extending round to the front of the abdomen.

A similar attack confined her to bed for four months in the early part of 1884; and, again, from November of that year until the following February (1885), she was laid up from the same cause.

During the intervals between these several illnesses, she was subject to irregular seizures of spasmodic abdominal pain, usually lasting for two or three hours at a time, and apparently induced by any unusual amount of exertion. For the past two years, however, these latter had become less frequent than formerly, although still liable to recur as the result of unaccustomed muscular effort. The last attack experienced was brought on two weeks before her admission to the hospital by an attempt to scrub a floor.

The patient was extremely thin, but not anæmic. Her general health was fairly good, but the size of the tumour entirely incapacitated her from earning a living, and she was consequently most anxious for relief. The family history was unimportant, excepting for the fact that her mother died of cancer of the breast.*

The *abdomen*, measuring forty-one and a half inches in girth at the level of the umbilicus, was filled by an apparently solid tumour, which overhung the pubes and groins as the patient lay in bed. The right half of the growth was of stony hardness, but the portion to the left of the middle line, extending far back into the corresponding loin, felt somewhat elastic in places as though it might contain fluid.

Per vaginam, the cervix lay high up and pointing directly forwards: it was soft and unenlarged, readily admitting the uterine sound for a distance of about one inch, beyond which point prolonged manipulation failed to introduce it. The cervix was influenced but slightly by abdominal palpation of the tumour which could not be felt in the pelvis.

The case was diagnosed as one of uterine fibro-myoma probably undergoing cystic degeneration; and with this

* I was unable to ascertain any definite facts as to the growth of the tumour subsequently to the patient's illness in 1883. She herself was of opinion that it had increased slowly from that date.

view operation for its removal was undertaken on December 17th, 1886.

On opening the abdominal cavity, the right half of the tumour was found closely united to the parietes by dense fibrous adhesions. After these had been separated, the mass was turned out whole, through an incision fourteen inches in length, and the abdomen was packed with carbolized sponges. The neck of the tumour was next secured in the usual manner near the level of the internal os uteri by means of Koeberlé's *serre-noeud;* and the entire growth, including both ovaries and tubes, was then removed by cutting through its base above the constricting wire. In doing this, a large quantity of dark brown grumous fluid, evidently altered blood, escaped from the left half of the tumour, fortunately without fouling the peritoneum, which was protected by the sponges previously introduced. These were now removed and replaced by a large flat sponge, while the torn parietal adhesions on the right side of the abdomen were secured by five or six transfixions with fine silk. The wound was then closed, and the stump treated extraperitoneally.

The after-progress of the case was uninterrupted, and the patient returned home quite well exactly six weeks from the day of operation.

For the following description of the tumour, as also for the carefully prepared section of it which I show here to-night, I am indebted to my friend and colleague Dr. W. Griffith.

The specimen exhibits a mesial vertical section of an enormously distended uterus, with a disintegrating fibromyoma in its anterior wall. The entire mass, when empty, weighed fifteen pounds, and must originally have contained at least five pounds of blood, as after the escape of a very considerable quantity it weighed nearly eighteen pounds.

It measured twelve inches in height and twenty inches in breadth, and was composed of two distinct portions limited externally by the line of attachment of the broad ligaments. The anterior portion consisted of a large interstitial fibro-

myoma, constituting nearly two thirds of the entire tumour. The remaining portion, formed by the posterior uterine wall, resembled in appearance a pregnant uterus.

The *left* Fallopian tube, measuring twelve inches in length, was greatly thickened and dilated towards its closed fimbriated extremity. It was full of thick grumous blood. The corresponding ovary, much elongated and flattened, measured three inches in length, and contained a simple cyst near its outer extremity.

The *right* ovary and tube showed changes similar to those noted on the left side, but much less advanced. On vertical mesial section the anterior portion was seen to consist of a red, fleshy fibroid with a calcareous capsule, and a large central ragged cavity due to disintegration of the growth. This cavity was continuous with that of the uterus by a large oval aperture measuring $5 \times 3\frac{1}{2}$ inches. Both were filled with putty-like old blood. The uterine cavity measured ten inches in length by four inches in breadth.

The wall of the uterus, after the retraction which followed immediately on the evacuation of its contents, is seen to be extremely thick, varying from one to two inches. The mucous membrane is atrophied.

Microscopic examination of the tumour shows the ordinary structure of a fibro-myoma, infiltrated with blood-colouring matter; the central portion exhibits the changes usually found in mucoid softening of these growths. The atrophied mucous membrane of the uterine cavity consists of a very thin layer of loose connective tissue infiltrated with leucocytes and without a trace of epithelial lining. The bases of the glands remain resting on the muscular wall, and retain their epithelium. The uterine wall is composed of large muscle-cells, with an abundance of connective tissue.

Remarks.—Retention of clots in cases of menorrhagia due to the presence of interstitial fibro-myomata is of common occurrence, the retained blood being subsequently expelled in the form of coagula, or escaping as a brownish discharge during the intervals between the monthly losses.

In such instances the cervical canal, although not uncommonly narrowed or distorted, is practically patent; and the temporary retention is due, in part at all events, to the fact that the normal muscular contractions of the enlarged uterus are interfered with by the presence of the growth or growths in its wall.

In the case under consideration the retention was complete and persistent from its onset. That it arose from some cause effecting occlusion of the cervical canal apart from any lack of expulsive power on the part of the uterus, is evidenced by the character of the uterine pains which followed shortly upon the arrest of menstruation; by the persistent though irregular recurrence of these pains at intervals, so long as the patient carried her tumour; and finally, by the hypertrophied state of the muscular wall of the distended uterus discovered on its removal.

The sudden occurrence and permanent nature of the obstruction point to something beyond mere pressure as its cause; and my belief would be that the atresia, probably inflammatory in origin, was intensified by distortion of the canal consequent on partial rotation of the elongated uterine cervix during the patient's confinement to bed in 1883. The history suggests this date as that of the probable formation of the adhesions which, at the operation, were found uniting the *anterior* surface of the tumour to the parietes on the *right* side of the abdomen.

The specimen is of some interest, I think, as demonstrating what seems to be a rare incident in the life-history of uterine tumours.

Personally, I have never met with or heard of a similar instance; nor have I succeeded in discovering any reference to one of such a nature in the 'Transactions' of this Society, or elsewhere. It is on these grounds, therefore, that I have ventured to bring forward the case in the hope that it may be deemed worthy of record.

Dr. GALABIN said that he thought that one of the points of interest in Mr. Meredith's case, as well as in the specimens pre-

viously shown by Dr. W. Griffith, was their bearing upon the question under what circumstances it is that the uterus becomes distended, either with blood, pus, or mucus, without an absolute obliteration of the cervical canal. He did not quite understand from the paper whether Mr. Meredith thought that, in his case, the canal was absolutely obliterated by adhesion or only closed by pressure. It was sometimes argued that a flexion of the uterus could not possibly produce obstructive dysmenorrhœa, because the fundus uteri is not found to be dilated in such cases. But the general rule was that, even in actual stenosis of the canal, the uterus became hypertrophied to overcome the obstruction and was not dilated. He had met, however, with a good many exceptions to this rule, in cases in which either the contraction of the uterus was interfered with by fibroid or other growths, or in which, after the menopause, the uterine contractility was no longer so active. In one instance pyometra in an old woman appeared to be the result of retroflexion, and was cured by frequently emptying the uterus by digital pressure. In a case of extreme stenosis of the cervical canal in a young woman, associated with prolapse, hæmatometra of a moderate size was produced, and not even a needle could at first be got into the canal. At the period, however, a few drops of blood appeared, a small-sized Priestley's dilator was got into the opening, and a considerable quantity of blood evacuated. The exceptional result in this instance appeared to be due to the extreme degree of the stenosis.

Dr. GERVIS had seen many cases of extreme dysmenorrhœa in cases of fibroid uterus connected with more or less stenosis of the cervix, but no case like Mr. Meredith's of actual atresia. In a case, however, of very large interstitial fibroid occupying the pelvis and leading to much suffering from its pressure, in which last year he had performed supra-vaginal hysterectomy, the interior of the tumour removed was found to be in a state of necrosis, and he would be glad to know from Mr. Meredith whether he had often found this condition in fibroids, and whether there were any symptoms indicative of its occurrence. In his (Dr. Gervis's) case there had been none.

Dr. HERMAN said that we ought not to base conclusions as to the power of flexions (or any other conditions not producing absolute occlusion) to prevent the exit of fluid from the uterus on cases like the present one, or on phenomena occurring in other parts of the body. The question as to the effect of flexion was one of fact, to be settled by observation. Some said that dilatation of the uterus was the result, and there were many pictures contained in text-books to show this. Others said there was hypertrophy. No specimens existed that showed either the dilatation or the hypertrophy; cases in which the uterus was

fixed, or in which it had undergone senile atrophy, being excepted.

Dr. HORROCKS asked whether the case had been diagnosed before the operation, and whether the patient had attained the climacteric period or not. He thought it threw light on some cases of fibromyomata in which, years after the cessation of the catamenia, uterine hæmorrhage occurred. He mentioned a case of a lady, aged 60, with a large fibromyoma, who after having attained the climacteric many years previously, began to lose a great deal of blood; it was thought at first it might be due to malignant degeneration, but this was not supported by other facts, and she had recovered and was now comparatively well. He suggested that the hæmatometra in Dr. Griffith's case, and the hæmorrhages in the cases similar to the one quoted, might be due to a breaking down or degeneration in the tumour opening into the uterine cavity.

Mr. MEREDITH, in reply to Dr. Galabin's remarks, stated his belief that the occlusion of the cervical canal, due in all probability to the causes mentioned in his paper, was complete from the date of its first occurrence three years and a half before the operation. His views as to the relative causation of hæmatometra and pyometra in association with a uterine tumour accorded with those expressed by Dr. Griffith. Thus the former condition, as a result of closure of the cervical canal, would arise during menstrual life, while the latter might result from a similar accident occurring subsequently to the menopause. Replying to Dr. Gervis's inquiry as to the occurrence of central disintegration leading to formation of cavities in fibro-myomatous tumours, Mr. Meredith believed that such changes, although uncommon, were not extremely rare. He had himself met with them in more than one instance.

SPECIAL MEETING.

NOVEMBER 23RD, 1887.

JOHN WILLIAMS, M.D., President, in the Chair.

Present—57 Fellows and 9 Visitors.

ON DELIVERY BY THE VAGINA IN EXTRA-UTERINE GESTATION.

By G. ERNEST HERMAN, M.B.LOND., F.R.C.P.,
OBSTETRIC PHYSICIAN TO THE LONDON HOSPITAL.

(Received February 3rd, 1887.)

(*Abstract.*)

THE author said that no general rules could be applied alike to all cases of extra-uterine gestation, and at all periods of their history. Different cases required different treatment, and individual cases required different treatment at different periods in their history. The object of the paper was to consider in what cases, and at what time, an extra-uterine gestation cyst might with advantage be emptied through the vagina.

The author first related a case under his own care. The patient was aged 40. The extra-uterine pregnancy was preceded by a long period of sterility. Symptoms like those of rupture of the sac occurred at about two months' pregnancy. Fœtal movements ceased at eight months' pregnancy. At nine months spurious labour-pains occurred, and lasted nearly a month, and these labour-pains were accompanied by spontaneous dilatation

of the cervix. Then the pains went off, the breasts diminished in size, and the cervix contracted. To attain certainty as to the diagnosis, the cervix was subsequently dilated, and this dilatation was followed by febrile disturbance. The cyst was then opened per vaginam, the child removed, and the cyst frequently washed out with carbolic solution. The placenta came away on the sixteenth day. Two and a half months afterwards the cyst had completely closed.

The author had collected 33 cases in which an extra-uterine gestation cyst had been emptied by the vagina, and from an examination of them he drew the following conclusions:

1. The operation of opening an extra-uterine gestation sac by the vagina early in pregnancy, before rupture has taken place, by the cautery knife or otherwise, is a dangerous and unscientific proceeding. Abdominal section ought always to be preferred to this.

2. Soon after rupture has taken place, when interference is called for to arrest hæmorrhage, abdominal section is more likely to succeed than vaginal.

3. When rupture has taken place, and the effusion of blood is followed by pyrexia, the indications for incision of the vagina are the same as those in hæmatocele from any other cause.

4. At, or soon after, full term, before suppuration has taken place, there may be conditions which indicate delivery by the vagina as preferable to abdominal section. These are:

5. When the fœtus is presenting with the head, breech, or feet, so that it can be extracted without altering its position, and

6. When it is quite certain, from the thinness of the structures separating the presenting part from the vaginal canal, that the placenta is not implanted on this part of the sac, and it is not certain that the placenta is not implanted on the anterior abdominal wall.

7. If the child cannot be delivered by the vagina without being turned, abdominal section should be performed.

8. No attempt should be made to remove the placenta.

9. The after-treatment should consist in frequent washing out of the sac.

10. After suppuration has taken place, the spontaneous opening of the sac into the vagina is one of its more favourable terminations.

CASES of extra-uterine pregnancy are not all alike, and the differences between different cases are very great. It follows that any one method of treatment is not equally suitable to all cases, and that to attain success in treatment we need to define the class of cases for which each particular method of treatment is especially suitable.

In the present communication I propose to consider the advantages and disadvantages of attacking extra-uterine pregnancy by the vagina, and to see how far the data at present at our disposal can help us in the selection of cases for that method of treatment.

I have myself treated one case in this way, and this case I shall first relate.

A. N—, aged 40, married, admitted into the London Hospital June 13th, 1884.

(Reported by Mr. Sydney D. Ashley, clinical clerk.)

Patient has not done any work other than the care of her house. Does not remember any illness either before or after marriage. Had one child seventeen years ago, which is living and healthy. No miscarriages.

In September, 1883, the catamenia, which until then had been regular, ceased to be so, and in October she was troubled with morning sickness. In November she was obliged to lie up with an illness which was said to be "inflammation of the womb," and which kept her in bed until the following March. Twice during this illness there was slight hæmorrhage from the vagina. During this time she noticed that her abdomen was enlarging, chiefly on the right side; but neither she nor her doctor suspected pregnancy, for she was told that the swelling was due to the "inflammation" and would subside in time. In March she became able to get about and went to see another doctor (Mr. F. M. Corner, of Poplar), who told her that she was pregnant, and that the child was alive but that it was "peculiarly placed." She complained at this time of considerable pain, which was almost entirely confined to the right side. She was advised to lie on the left side, and after carrying out this advice the pain

gradually disappeared. In April she first felt the movements of the child. She continued to feel them for a month and then they suddenly stopped. This was followed by severe pain, causing the patient to lie up. Thinking that labour was coming on, she sent for the doctor and for the nurse, but although these pains continued till she came into the hospital there was no further sign of approaching delivery.

On June 6th Dr. Herman saw her in consultation with Dr. A. W. Woodman Dowding, her medical attendant. There was an abdominal swelling, feeling like a pregnant uterus, reaching about one third of the distance between the umbilicus and the ensiform cartilage. The cervix uteri was high up and close to the pubes, and was softened as in pregnancy. The os was open enough to admit the finger, which when introduced encountered something within the uterus feeling like a fold of the membranes. There was a swelling occupying the hollow of the sacrum and continuous with the abdominal swelling. No fœtal heart-sounds could be heard, and the fœtal parts could not be identified. The sound went in up to the handle, with the concavity backwards. Low down and to the left of the abdominal swelling a hard projecting lump was felt.

June 13th.—The patient was admitted into the London Hospital. The conditions ascertained on examination were much the same as on June 6th. The circumference of the abdomen at the umbilicus was thirty-one and three quarters inches; the greatest girth, which was about three inches below the umbilicus, was thirty-three and a half inches. The os uteri was less open. The sound, with concavity backwards, entered six and a half inches. There was a bunch of swollen external piles. Appetite good; bowels very confined. No sign of disease in chest. Urine 1012, acid, no albumen, no difficulty in passing or retaining it.

24th.—Temperature since admission has only once exceeded 99·5°. For the last three days patient has been

complaining of a good deal of pain on and off in the left lower abdomen, each attack of pain being severe and lasting about an hour. Since admission she says the breasts have considerably diminished in size. She is not anæmic nor greatly wasted.

In order to make the diagnosis certain, the cervix was dilated under anæsthesia so that the uterine contents might be ascertained. The cervix was now so far contracted that No. 11 Hegar's dilator entered with difficulty. No. 14 urethral bougie entered the uterus five and seven-eighths inches, and No. 7 rectal bougie five and a quarter inches. No solid contents could be felt in the uterus, but the increased length of its cavity made it impossible to thoroughly explore its interior with the finger.

After this the temperature gradually rose till on June 30th it reached 103·4°.

The diagnosis had been made of abdominal gestation, and in consequence of the continued and increasing pyrexia it was decided to remove by operation the cause of the symptoms.

July 3rd.—The patient was anæsthetised, and after consultation with Mr. McCarthy an incision was made in the posterior vaginal wall, through which a knob feeling like a fœtal limb could be perceived. Thick, blackish-green fluid escaped. The knob mentioned was found to be a knee. The leg was brought out, and with the aid of a blunt hook the trunk and arms were delivered without difficulty. The child was dead but did not present signs of advanced decomposition. The opening made by the incision was not large enough to allow the head to pass, and therefore, to prevent laceration or the need for extension of the incision, the head was perforated, crushed with the cephalotribe and extracted. The placenta was left untouched. The cavity was washed out with a carbolic acid solution and a Keith's drainage-tube inserted. There was very little hæmorrhage.

5th.—Since operation the patient has had no pain. Discharge slightly offensive. The cavity has been washed

out twice daily since operation with a 1 in 100 carbolic solution.

7th.—Discharge extremely offensive. Cavity to be washed out every three hours. No pain. No sickness.

10th.—An attack of sharp pain last night. To-day no pain. Takes food well.

19th.—Since last note the patient's condition has continued much the same, the discharge continuing more or less offensive, the temperature varying irregularly (see chart), food being taken well, no pain complained of, and the general condition continuing good. The cavity has been frequently washed out with 1 per cent. carbolic solution, about three quarts of fluid being used each time. To-day a quantity of brown, shreddy, fibrous débris, evidently the remains of the placenta, and about half a tumblerful in amount, came away.

From this time the discharge ceased to be offensive and the patient continued to improve.

August 12th.—She was allowed to get up.

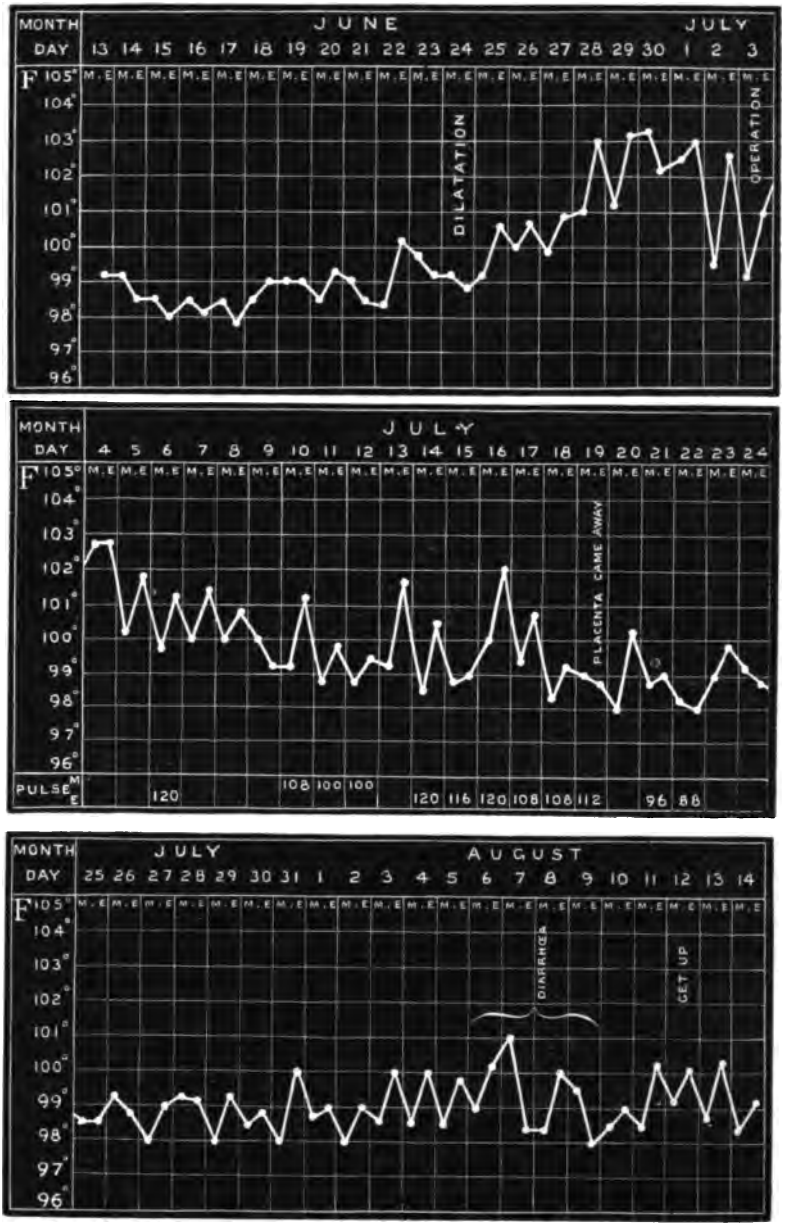
28th.—A small sinus only at the situation of incision.

31st.—Patient discharged.

September 30th.—The only trace of the former condition is some induration behind the uterus.

Before considering the general subject, I may briefly recapitulate the important features of this case. As in many others the extra-uterine pregnancy was preceded by a long period of sterility. Symptoms like those of pelvic inflammation, possibly due to rupture of a sac, occurred at about two months' pregnancy. At about eight months the fœtal movements ceased, spurious labour pains came on and lasted nearly a month. These labour pains were accompanied by spontaneous dilatation of the cervix, a phenomenon which has been observed in some other cases,* but not in many. I think it probably has

* Turnbull, 'Mem. Med. Society of London,' 1792. In the 'Dict. des Sc. méd.,' Paris, 1817, t. xix, Galli is quoted (source not given) as having been able to pass his finger into the uterus; but neither Turnbull nor Galli mention the subsequent re-contraction of the cervix.


MONTH
DAY
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JULY
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F
105°
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M. E
DILATATION
OPERATION
MONTH
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PLACENTA CAME AWAY
PULSE
120
108 100 100
120 116 120 108 108 112
96 88
MONTH
DAY
JULY
AUGUST
25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14
DIARRHŒA
GET UP

occurred in more cases than those in which it has been described, but has not been thought worthy of special mention. It is a phenomenon of much interest because it goes to show that the physical changes which produce the spurious labour pains are in the uterus. Then the pains ceased, the breasts diminished in size, and the cervix contracted.

The diagnosis was at first difficult because the body of the uterus was on one side of the gestation sac, and low down in the abdomen, and therefore could not be easily identified by abdominal palpation; and the sound when introduced went either through the uterus or along a Fallopian tube, and thus gave a wrong idea of the size of the uterus. To attain certainty as to the size of the uterus the cervix was dilated, and this dilatation was followed by febrile symptoms. Ten days afterwards the cyst was opened by an incision in the vagina, the child removed, and the cyst subsequently frequently washed out with carbolic solution. The placenta came away on the sixteenth day. Two and a half months afterwards the cyst had completely closed.

The published cases which illustrate the results of delivery by the vagina in extra-uterine gestation are not numerous. Parry, in his admirable work on extra-uterine pregnancy, only refers to a few cases, and in spite of his industry and care, errors have crept in; thus, for instance, he quotes Norman's case twice over (from the original, and also from a French abstract) and he includes a case by Lauverjat and another by Huguier, in both of which the gestation does not seem to have been extra-uterine, and the original reporter does not say that it was.

I have examined the original records of the cases referred to by Parry, with the exception of one (Delisle's case) which I have not been able to get at. I have added to them other cases either not included in his collection or published since. I am indebted to Dr. Edis for complete information about a case of his only partially pub-

lished. In all, I find thirty-three cases. These I have arranged in a tabular form.

Pinard, in his very careful and excellent article on extra-uterine pregnancy,* gives a list of cases, but his classification of them is not always correct, and he gives no details of them. Thus he puts Goelet's case, operated on a month after rupture, with Thomas's, operated on before rupture; and Dubois' case, in which the fœtus was disintegrated, along with those in which the child was extracted entire. My tables include cases not included in Pinard's list.

It is generally recognised that the indications for treatment in extra-uterine gestation are different at different periods in its history. In studying the question of interference by the vagina we must therefore consider the problem as it presents itself at different periods of pregnancy. The periods at which the conditions differ so much that each needs separate consideration are the following: (1) early in pregnancy, before rupture of the sac; (2) when rupture of the sac has taken place; (3) at or near term; (4) when the fœtus has become disintegrated. Upon the treatment by vaginal section at each of these periods I propose to comment.

I. First, is it desirable, early in pregnancy, before rupture of the sac, to open and empty it by the vagina? This practice was initiated by Dr. Gaillard Thomas, of New York, and has been mentioned with eulogy in most works on the subject. It therefore calls for respectful consideration. There have been as yet, so far as I can find, only two cases in which Thomas's example has been followed; those by Harrison and O'Hara. In Thomas's case attempted extraction of the placenta was followed by hæmorrhage which reduced the patient to syncope, and during convalescence there were dangerous symptoms of septicæmia. O'Hara's patient died eighty-six hours afterwards from peritonitis. In both these cases the cautery-knife was used. Harrison's patient recovered.

* 'Dictionnaire Encyclopédique des Sciences Médicales.'

In this case an ordinary knife was employed. So far as these cases go, they show that the operation is not a very safe one, and they do not show that the use of the cautery-knife is a great advantage.*

Considering, however, what may be expected from this operation, it must be admitted that, if successful, it will undoubtedly stop the gestation, and therefore is not to be compared with modes of treatment of uncertain effect, such as galvanism, puncture, injection of narcotics, &c. The only mode of treatment which offers an equal certainty of cure if the patient recover from the operation, is removal of the cyst by abdominal section. Given a case in which the gestation sac is free from adhesions (and Parry, from an examination of recorded cases, finds that in most cases of early tubal gestation adhesions are absent), its removal by abdominal section would be, in the hands of a competent operator, neither difficult nor very dangerous. The operator could identify the structures he was dealing with; he could remove the cyst entire, and close the wound; the only damage to the parts below, from which the cyst receives its blood, would be the passage of the ligature needle. In the vaginal operation the operator cannot tell what structures he is cutting through; the vessels which supply the ovum with blood approach it from below, running in the broad ligament; and, in making an incision in the under part of the cyst large enough to admit of its being emptied, vessels capable of bleeding largely can only be avoided by good luck. The cyst, moreover, when emptied, has to be drained, and this brings with it risk of septicæmia, from which Thomas's patient nearly died. The cause of death of O'Hara's patient, viz. peritonitis, shows that the

* Since the tables accompanying this paper were printed I have found a reference to another case. MacDougall ('Edin. Med. Journal,' 1877, p. 17) says that T. Keith in a case of extra-uterine gestation cut into the sac through the vagina and removed fœtus and placenta. "The woman, in spite of the terrible hæmorrhage that ensued, made a good recovery." This does not lead me to alter the above remarks.

operator cannot be certain of limiting his incision to the gestation sac.

For these reasons I think that, where the diagnosis has been correctly made, Thomas's operation, or any vaginal operation, is, at this stage, a much more dangerous one than the removal of the cyst by abdominal section.

But one of the chief difficulties in the way of decision as to treatment in the early stage of extra-uterine gestation is the uncertainty of diagnosis. We must therefore consider what will be the result of operative interference, not only if the diagnosis be correct, but also if it prove incorrect. The supposed gestation may be a small ovarian cyst, a dilated Fallopian tube, a fibroid, a lump of fæces, a hæmatocele, or a mass formed by peritoneal thickening and adhesions, not to speak of other rarer conditions. Let us suppose abdominal section performed: in some of these conditions, removal by that method is the best treatment, and the patient would therefore benefit by the operation, although undertaken on account of a mistaken diagnosis. In the others, the operator would at least find out the state of things present, and refrain from doing harm. On the other hand, the useless danger of cutting from the vagina by a red-hot knife, or otherwise, into a tumour of one of the kinds mentioned above, does not need to be pointed out.

For these reasons I regard a successful case of the practice initiated by Thomas as rather a piece of good fortune to be wondered at, than an example to be followed.

II. The next stage in the history of the disease which we have to consider is shortly after rupture of the sac, when the signs and symptoms are those of a pelvic hæmatocele. The diagnosis of the cause of the hæmatocele is here even more difficult than before rupture. At this stage an operation may be performed for one of two reasons.

First, immediately after the diagnosis of internal hæmorrhage has been made, for the purpose of removing the effused blood, and stopping further hæmorrhage. I am

not aware that anyone has proposed to operate *per vaginam* with this intention; and the advantages of the abdominal method of operation (if an operation is to be done) in these circumstances are so obvious, especially when we bear in mind the uncertainty of the diagnosis, that it does not need discussion.

Secondly, after the danger of death from hæmorrhage has passed away, and the operation is called for by the presence of febrile disturbance due to changes in the effused blood. Here the indications seem to me the same as in hæmatocele from any other cause. We know that in most cases of hæmatocele the blood is absorbed and the patient recovers; and there is reason to believe that in hæmatocele from extra-uterine gestation the fœtus may be absorbed also. But where there are signs of suppuration the propriety of incision and drainage is evident. I find three cases on record, one published by Simpson, one by Lewers, one by Goelet, of hæmatocele due to rupture of early extra-uterine gestation treated in this manner, the blood being let out, and then the fœtus removed. In none of the cases was the diagnosis that the hæmatocele was due to extra-uterine gestation made before operation. All the patients recovered. Two of them emphasize the general rule of not attempting to remove the placenta. In Simpson's case it is stated that "where the placenta was situated could not be made out," which implies that some attempt at its identification at least was made, and it is added that the patient "nearly died after the operation." In Lewers' case, an attempt to remove something which was taken to be clot, ten days afterwards, produced smart hæmorrhage. In Goelet's case the operation was not performed till a month after rupture.

III. At or near term. These cases, from an operative point of view, may be described as those in which a child of considerable size has to be removed entire. So far as delivery is concerned, it matters very little whether the child be alive or dead, whether its age be a few weeks more or less than nine months.

We must compare the advantages and disadvantages of removal of the child by abdominal and by vaginal section. In the abdominal operation, manipulation is easier, and the parts being open to view, we can tell better what we are doing. But we may meet with one formidable difficulty, which is the implantation of the placenta on the anterior abdominal wall, leading as it does to hæmorrhage when the abdominal incision is made terrible in amount, and very difficult of arrest. The abdominal walls are often thick, so that it is not always possible to recognise beforehand the site of the placenta.

When the child lies behind the uterus, with its presenting part occupying Douglas's pouch, the coverings which separate it from the vaginal canal are often very thin. It may be possible to identify through the vagina the sutures of the fœtal head, as was done in Hancock Wathen's case. If, as in this case, we can through the vagina feel the presenting part of the fœtus, and that it is everywhere separated only by a thin membrane from the examining finger, we may be pretty sure that the placenta is not in the way. Given then a case in which the child can be reached by a vaginal incision, in which it is quite certain that the placenta is not implanted over the parts which have to be cut through, and in which it is not equally certain that the placenta is not attached to the abdominal wall, it appears to me that vaginal delivery is indicated. There is yet a condition which makes the indication clearer, viz. when the fœtal part felt through the vagina is the head or feet, so that when the vagina is cut through the child can be seized and extracted without passing in the hand.

I find five cases in which the extra-uterine fœtus was extracted by the vagina, with success so far as the mother was concerned. In three of these the head presented, and delivery was accomplished with forceps; in one the breech presented, and was pulled down with the blunt hook; and in the remaining one the head presented, and delivery is said to have been easy. In two of them a

living child was delivered; in the others the child was dead before the operation. In none of them was any attempt made to remove the placenta. In the cases in which the after-treatment is mentioned, it consisted in the frequent washing out of the cavity with an antiseptic solution. Continuous irrigation was attempted in some of them, but it was found impracticable to carry it out without disadvantages greater than the benefit. The liability to putrid intoxication from the decomposing placenta, and the necessity for free washing out, is shown by Cases 12, 14, and 15, in which a rising temperature was repeatedly lowered by washing out the sac.

The unsuccessful cases are seven in number. Of these two were performed under conditions very inimical to success, viz. Caignou's and Edis's, in both of which peritonitis was present at the time of operation. In one case (Tait's) the placenta was removed at the time of operation, and the patient died from hæmorrhage. In another (Norman's) the placenta was searched for but not found, intestines were felt, and the patient died from peritonitis. In Bandl's case the placenta was removed at the time of operation, with much hæmorrhage. Rupin's patient died on the fourth day from repeated hæmorrhages, one of the accidents liable to occur after the removal of an extra-uterine gestation. These facts emphasise the rule of not trying to remove the placenta, and the records of cases operated on by the abdominal method show so many similar ones, that I think Matthieson's case, in which the placenta was successfully removed, can only be regarded as an exceptional piece of good fortune. The liability to hæmorrhage after the extraction of an extra-uterine fœtus, even if the placenta be not meddled with, seems to me a reason for postponing operation as long as possible after the death of the fœtus; for the longer the operation can be postponed with safety to the patient, the greater the degree to which the placental circulation will be obliterated. There are rare cases in which nature seems herself to point the way by the occurrence of spon-

taneous rupture into the vagina at term. I find three cases of this occurrence which I have been able to quote from the original records. In one the child was delivered by turning, in the other two turning was attempted without success, in all the patient died. Parry mentions another case in which turning was attempted without success, but he does not mention the result, and I have not been able to consult the original. He also quotes a case of Huguier's, but in the publication referred to by him there is no mention of rupture of the vagina, and the case seems to have been one of uterine pregnancy, taken for extra-uterine, but ending in natural delivery.

The unfavourable result of these cases, and the fact that in all the cases of delivery by the vagina which did well, the head or breech presented and was not changed, show that there is a good deal of risk, the causes of which are obvious, attending version in these cases, and I think thay point to the conclusion that if the child does not lie in a position favourable for delivery, abdominal section should be preferred.

IV. The fœtus may be discharged piecemeal through the vagina, after it has been disintegrated, and the soft parts dissolved, by suppuration. The statements that have been made as to the danger of this process, show strongly the need for a most careful analysis and classification of the published cases. Parry says (p. 167), "It is, however, a fact that the opening of the fœtal cavity into the vagina is one very likely to terminate in disaster unless art intervene. One would suppose that this would be one of the most favourable channels by which the débris of an extra-uterine fœtus could be discharged." The mortality of this event he puts down at 41·66 per cent., and quotes Puech, who gives it as 21 per cent., and Mattei at 28 per cent. It should be added that Parry remarks that the numbers are "two small to warrant us in accepting their results as final." I do not find on what cases Parry and Puech base their estimate, but an examination of the grounds of Mattei's conclusion shows the need for careful

classification, for it is only based on seven cases, and, of these, in one I find no evidence that the gestation was extra-uterine (a case described by Guillemeau), and another is that of Norman, in which the fœtus was removed entire.

The table of cases that I have collected shows that cases in which the fœtus has been completely disintegrated by suppuration, and those in which it is not, are quite distinct in their prognosis. I have found eight in which the fœtus was completely broken up, and of these all recovered except one, which was complicated by an intestinal fistula. The formation of a fæcal fistula is recorded in two cases, and in each of these two the disintegration of the child was not complete. In one the body of the child had to be removed by traction on the axilla, and in the other with forceps; in the latter the trunk was adherent to the cyst wall.

The conclusion to be drawn from these cases is that when an extra-uterine gestation sac has suppurated, the formation of an opening into the vagina is actually, as Parry says one would suppose it to be, "one of the most favourable channels" for its discharge. The two cases in which an intestinal fistula formed point to the practical rule that when suppuration has taken place, but the disintegration of the fœtus is only partially complete, it is not well to use force to drag away the child (for in many cases there is adhesion between the child and the cyst wall), but rather to wait until suppuration has so lessened and broken it up that it can be easily removed.

Summarising what has been said I would submit the following propositions as the practical rules to which the facts at present before us point:

1. The operation of opening an extra-uterine gestation-sac by the vagina early in pregnancy, before rupture has taken place, by the cautery knife or otherwise, is a dangerous and unscientific proceeding. Abdominal section ought at this time always to be preferred.

2. Immediately after rupture has taken place, when interference is called for to arrest internal hæmorrhage, the abdominal operation is more likely to be successful than the vaginal.

3. After rupture has taken place, and the effusion of blood has been followed by pyrexia, the indications for incision of the vagina are the same as in hæmatocele from any other cause.

4. At, or soon after, full term, before suppuration has taken place, there may be conditions which indicate delivery by the vagina as preferable to abdominal section. These are:

5. When the fœtus is presenting with the head, feet, or breech, so that it can be extracted without altering its position, and

6. When it is quite certain, from the thinness of the structures separating the presenting part from the vaginal canal, that the placenta is not implanted on this part of the sac, and it is not equally certain that the placenta is not attached to the anterior abdominal wall.

7. If the child cannot be delivered by the vagina without being turned, abdominal section should be performed.

8. No attempt should, as a rule, be made to remove the placenta.

9. The after-treatment should consist in frequent washing out of the sac.

10. After suppuration has taken place, the opening of the sac into the vagina is one of the more favourable terminations.

A.—*Cases of Vaginal Operation early in*

No.	Reference.	Age.	No. of ch./abor.	Length of pregnancy.	Local signs.	State of child.
1	Thomas, American Journal of Obstetrics, vol. viii, 1875, p. 519	—	0/0	—	Cyst to left of uterus, as large as uterus; ballottement felt in it	—
2	Harrison, American Journal of Obstetrics, vol. xi, 1878, p. 810	28	3/1	3—4 months	Large globular tumour occupying Douglas's pouch, and displacing uterus forwards	—
3	O'Hara, American Journal of Obstetrics, vol. xi, 1878, p. 825	29	3/1	4 months	Tumour in retro-uterine space, like retroflexed gravid womb, closely attached to uterus; neck of uterus pushed towards pubes and to right; tumour elastic and tender. Ballottement not perceived; tumour nearly on floor of pelvis	—

B.—*Cases of Vaginal Operation*

4	Simpson, Edinburgh Medical Journal, Sept., 1863, p. 270	45	—	—	Sensitive tumour stretching across pelvis, between uterus and rectum, softish at some places, firm at others; rapid enlargement of tumour in the course of 24 hours; "distressing and dangerous symptoms"	—
5	Lewers, Obst. Trans., vol. xxviii, 1886, p. 207	27	2/0	About 3 months	Elastic swelling, size of large egg; occupying right posterior quarter of pelvis; large tumour formed subsequently, displacing uterus forwards, and bulging down posterior vaginal wall	—
6	Goelet, New York Medical Record, Oct. 12, 1878	26	3/0	„	Large hard tumour in Douglas's cul-de-sac; uterus pushed upwards and forwards against pubes; diagnosis, "hæmatocele;" history against extra-uterine gestation: therefore this negatived	Decomposing. 3 inches long

egnancy, before Rupture of the Sac.

Delivery of child.	Placenta.	Result.	Remarks.
Incision of vagina, 2 in. in length, with Byrne's galvano-caustic knife; fœtus extracted with fingers and placental forceps; cord broken	Placenta partly delivered by traction on cord, half of it left adherent; extraction followed by gush of blood reducing patient to syncope and requiring injection of Liq. Ferri Perch., and subsequent packing of sac with cotton soaked in Liq. Ferri Persulph.	R.	Dangerous symptoms of septicæmia followed operation, checked by frequent washing out of sac with carbolic acid water.
Exploratory puncture, followed by vaginal incision, and removal of child	Placenta left *in situ*, cavity washed out with warm carbolic solution	R.	T. 104° at time of operation; sac first continuously irrigated, then washed out hourly with carbolic solution; afterwards less frequently.
Incision of vagina with Paquelin's thermo-cautery knife; incision about 3 in. in length; fœtus lying loosely in abdomen, removed with fingers	Placenta cut through in incision; peeled off without much difficulty or hæmorrhage; no subsequent hæmorrhage	D.	Died 86 hours afterwards of peritonitis.

soon after Rupture of the Sac.

Vaginal incision; several coagula extracted; then slender, entire, early fœtus	Extracted with fœtus	R.	Nearly died after operation.
Incision; blood let out; fœtus removed 4 days after	Attempt at removing what appeared to be clot, 10 days after incision, produced sharp hæmorrhage	R.	Cavity washed out with carbolic acid 1—40, and iodoform put into it.
A month after formation of hæmatocele symptoms of septicæmia; T. 105·5°, delirium, vomiting, purging, aspiration followed by incision	Left undisturbed; pieces came away on 4th day	R.	Cavity cleansed with carbolic acid; continuous irrigation attempted but discontinued; cavity then washed out every hour; when washing out omitted temp. rose.

C.—*Cases of spontaneous Rupture*

No.	Reference.	Age.	No. of ch./abor.	Length of pregnancy.	Local signs.	State of child.
7	Schmitt, Revue des Sciences Médicales, T. viii, 1876, p. 251 (quoted from Memorabilien, 1874)	36	11/0	Full term	During examination a part of the vagina, which was tensely stretched over a sort of knob, gave way, fœtid fluid came out, and with it right arm of fœtus. Fœtal heart heard and movements felt some hours before	—
8	Sautini, Schmidt's Jahrbuch, Band 153, S. 295 (quoted from l'Ippocratico)	36	4/0	8 months	Discharge of liquor amnii, but no labour pains. Head felt quite uncovered in vagina, but os uteri not to be felt. Belly very tender, and fœtus superficial	—
9	Charleton and Williams, Lond. Med. Gazette, vol. xxxiii, 1844, p. 654	46	3/0	Full term	24 hours after beginning of pains neither os nor fœtus could be felt; 48 hours after opening taken to be os uteri felt dilated and soft	Full-sized, decomposing
10	Lusk, American Journal of Obstetrics, March, 1886, p. 242	32	3/0	4 or 5 months	Swelling in posterior vaginal wall, in which was an opening, through which protruded a fœtal head	7½ inches long, partially decomposed

D.—*Cases of Vaginal Operation at*

11	King, London Medical Repository, vol. xii, 1820, p. 241	—	—	Term; spurious labour for 4 days	Os uteri could nowhere be felt. Head of fœtus floated and vacillated on right of uterus, and pushed uterus from its situation	Living
12	Hancock Wathen, Med. Times and Gazette, Dec. 15, 1877, p. 641	25	1/0	8 weeks beyond full term; spurious labour at term lasted 19 days	Per vaginam fœtal head felt presenting; sutures plainly felt; rugose membrane completely investing the head, plainly felt between it and the finger. Os uteri could not be felt	Decomposing

xtra-uterine Pregnancy into Vagina.

Delivery of child.	Placenta.	Result.	Remarks.
Version impracticable on account of impaction of shoulder in pelvis	—	D.	Died undelivered, apparently from shock, a few hours after rupture of vagina; no trace of inflammation; no sac; placenta adherent to mesentery.
Forceps delivery attempted without success. Delivery effected by turning. Fœtus found to lie in a cavity larger and more irregular than uterine cavity	Placenta found lying free in cavity	D.	Death on following day from peritonitis; autopsy showed cyst behind uterus. This cyst communicated with vagina by rent, through which child had been delivered.
Turning accomplished, but extraction could not be effected	—	D.	Child contained in cavity formed by abdominal walls in front, bladder below, uterus and bowels behind; ulceration of bladder.
Opening enlarged with finger and fœtus removed	Half hand inserted into sac and placenta removed piecemeal	R.	Patient extremely feeble after manipulations; disinfectant injections employed daily.
or near term. I. Successful.			
Vaginal incision; child expelled by abdominal pressure aided by vectis and forceps; cord broken	Placenta very small; no information as to how or when delivered	R.	Third day after delivery intestine protruded at wound. Treated by right lateral decubitus.
Vaginal incision; head extracted with forceps; delivery completed with blunt hook in axilla. (After delivery uterus felt posteriorly and to right.)	No effort to extract placenta, which came away next day	R.	Sac washed out daily with iodine water. Fall of 1° in temp. often observed after washing out

No.	Reference.	Age.	No. of ch./abor.	Length of pregnancy.	Local signs.	State of child.
13	Chauvenet and Negri, Centralbl. für Gynäkologie, 1885, S. 733 (quoted from Annali di Obstetricia)	33	0/0	11 months	Head deep in pelvic canal; covered by vagina; uterus pushed upwards and to the right	Macerated; 5—6 lb.
14	Mathiesen, Obst. Trans., vol. xxvi, 1884, p. 132	30	5/0	8 or 9 months	Cervix far up on the right side. Tumour behind it. Roof of vagina filled with semi-elastic doughy mass, solid on deeper pressure. Mass high up, requiring external pressure to bring it within reach of finger	8 lb. 7½ oz.; lived
15	Herman, supra (present paper)	40	1/0	9 months	Swelling in hollow of sacrum; projecting fœtal limb could be felt; uterus pushed forward	Dead, not decomposed
					E.—*Cases of Vaginal Operation at*	
16	Rupin, Gazette des Hôpitaux, Feb. 7th, 1860, p. 63	30	2/0	6 months, spurious labour pains for 8 days	Tumour projecting into vagina, of such a size that patient could pass neither urine nor fæces; it reached down to vulva. Finger could not be passed between pubes and tumour, so that os uteri could not be reached. Covering of tumour so thin that it could be identified as fœtal head, and position made out	—
17	Bandl, Von Pitha und Billroth, Chirurgie, Band iv, Lieferung 5, S. 87	29	2/0	8 months	Pelvis filled with indistinctly fluctuating tumour; uterus pushed forwards and upwards; tumour pressed down so as to be visible when labia separated. Coverings so thin that finger might have been pushed through them	4¼ lb.
18	Edis, British Gynæcological Journal, July, 1885, p. 118, and personal communication	41	3/1	6 months	Fœtal head low down in pelvis behind and to right of cervix uteri. Temp. 103°, P. 140, rigors, at time of operation	Dead two or three days
19	Norman, Medico-Chirurgical Transactions, vol. xiii, p. 348	41	0/1	8 months	Much œdema, cyanosis, orthopnœa, os uteri could not be felt; child's head felt. Covered by an intervening substance as thick as the parietes of the uterus; continuous with the vagina. Anterior cul-de-sac out of reach	D.

Delivery of child.	Placenta.	Result.	Remarks.
Extraction easy	Placenta left untouched; cavity drained and frequently irrigated	R.	Cord came away on 4th day; discharge of placenta not noticed; said to have never come away.
Incision of vagina. Child presenting with face. Delivery effected by moderate traction with forceps	Peeled off, hæmorrhage being arrested by swabbing with solution of perchloride of iron	R.	Cavity washed out with antiseptic solutions every day.
Traction on groin with blunt hook; then cephalotripsy	No attempt at extraction; discharged on 16th day	R.	Cavity freely washed out with carbolic solution, and drained.
or near term. II. Unsuccessful.			
Vaginal incision; head extracted, method not mentioned; cord broke; contractions of cyst seen	Something soft, believed to be placenta, felt at end of cyst; but examination not persisted in, and no attempt at extraction made	D.	Died on 4th day from repeated hæmorrhages. Placenta larger and thicker than usual; bones belonging to a fœtus of about four months extracted from the middle of it.
Vagina and posterior wall of cervix uteri cut through with scissors. Child turned and delivered	Placenta and greater part of membranes removed immediately with much hæmorhage	D.	Opening made in abdominal wall, and drainage-tube put through from abdominal to vaginal opening. Death from peritonitis on 3rd day.
Incision with Paquelin cautery	Left untouched. Frequent irrigation of cavity with iodized water	D.	Much interference before seen by Dr. Edis. Died on 5th day; septicæmia. Localised pus in peritoneal cavity.
Vaginal incision and rupture of membranes. Next day incision enlarged and child extracted by craniotomy; cord broken	Placenta searched for, could not be found. Intestines felt	D.	Death from peritonitis on 4th day. Placenta attached to right broad ligament; no adhesions; uterine fibroid.

No.	Reference.	Age.	No. of ch./abor.	Length of pregnancy.	Local signs.	State of child.
20	Lawson Tait, Med. Times and Gazette, vol. ii, 1873, p. 119	32	1/0	8 months	Vaginal tumour filling up the whole available space behind the uterus; tumour of boggy feeling; uterus in front of it; knee of child and edge of placenta felt per rectum	Dead some time
21	Caignou, Archives Générales de Médecine, T. xxi, 1829, p. 286	—	2/0	6½ months	Os uteri 1½ inch above pubes, pushed forwards and to right. Tumour about 2 inches from vulva, through coverings of which fœtal head could be felt. Symptoms of peritonitis for three days or more before delivery	—
22	Agnew, Philad. Med. Times, Jan. 23, 1875, p. 270	—	—	—	Head lying in Douglas's cul-de-sac	Full grown

F.—*Cases of Discharge or Removal of*

23	Harder, Arch. Gén. de Méd., T. x, 1836, p. 488 (quoted from Allg. Med. Zeitung, April, 1835)	30	1/0	11 months	Vagina thickened and tumefied; fœtal head felt through it between rectum and uterus, uterus being pushed forwards and upwards. Hectic fever, fœtid discharge; opening in vagina through which finger could reach head	D.
24	Priestley, Obstetrical Transactions, vol. xxi, 1879, p. 24	—	—	12 years	Cervix uteri pressed forward. Pelvis filled with solid portion of tumour	—
25	Dubois, reported by Voillemier, Lond. Med. Gaz., vol. xxix, 1841, p. 61 (from l'Examinateur)	41	—	Probably 21 months, a year after spurious labour	By the side of vagina, fixed in the upper strait, a round hard tumour, evidently formed by the head; it was covered by a soft and thin envelope, and the sagittal suture could easily be felt. Uterus behind horizontal ramus of right pubes	D.

NOTE.—Cases 25 and 26 may possibly be the same, as it is only in the

Delivery of child.	Placenta.	Result.	Remarks.
Vaginal incision; fœtus delivered by traction on knee	Placenta attached in front; removed without apparent hæmorrhage; hard and fleshy; weighing nearly three pounds. Cyst ruptured, and intestine protruded into wound	D.	Patient sank in a few hours. Much clotted blood among intestines.
Vaginal incision; child extracted: method not mentioned; contractions of cyst seen	Placenta left	D.	Died 21 hours afterwards. Sanguineo-purulent fluid in peritoneal cavity; omentum gangrenous; cyst on point of rupture.
Removed through posterior wall of vagina	Found loose, and readily extracted	D.	Did well for a few days. Death attributed to injection of Sol. Pot. Permang.
Disintegrated Fœtus by the Vagina.			
Vaginal incision. Fœtus extracted in two sittings on successive days. Much fœtid pus escaped	No trace of membranes, placenta, or cord	R.	Incision postponed for six months after diagnosis had been made.
Suppuration and spontaneous opening of tumour into vagina; fœtal bones presenting at orifice. Removal in successive operations, extending over 4 months	—	R.	—
Vaginal incision down to bones of head. Fœtus discharged and partly extracted piecemeal during subsequent 6 weeks	No information	R.	—

patient's age and the length of pregnancy that there is a difference.

No.	Reference.	Age.	No. of ch./abor.	Period of pregnancy.	Local signs.	State of child.
26	Dubois, Gazette des Hôpitaux, 1840, p. 58	Young	—	15 months	Fœtal head engaged in pelvic inlet, occupying recto-uterine cul-de-sac, pushing vagina and uterus forward	—
27	Purefoy, Med. Press and Circular, Mar. 21, 1877, p. 223	—	—	8 months	No account of vaginal signs. Abdominal tumour reaching an inch above umbilicus	—
28	Evory Kennedy, Brit. Med. Journal, Jan. 23, 1869, p. 67	—	1/0	18 years	Uterus pushed over to left side and front; fulness at upper part of vagina and right side of uterus	—
29	Drage, Obst. Trans., vol. ii, p. 254	31	3/0	2½ years	Cervix uteri shortened. Uterus gave the idea of pregnancy most completely	—
30	Colman, Med. and Phys. Journ., vol. ii, 1799, p. 262	—	—	13 months	Globular substance low in the pelvis; os uteri high behind the pubis	Fully developed
31	Müller, Charité Annalen Jahrg., ii, Berlin, 1877, S. 395	33	3/0	4 years	Cervix pushed forward. Posterior vaginal fornix bulged down by a tumour of woody hardness and crepitant feeling	—
32	Bozeman, New York Med. Journ., Dec. 20, 1884, p. 693	38	6/0	3 years and 8 months	Intra-uterine pregnancy following and co-existing with old extra-uterine pregnancy. After delivery of intra-uterine fœtus an uneven and projecting mass presented in Douglas's pouch; this recognised as an extra-uterine fœtus	Soft parts almost entirely removed by absorption. A 6 mos. fœtus
33	Grandin, Amer. Journ. of Obstetrics, March, 1886, p. 252	28	0/0	17 months? 10 months?	Vaginal cul-de-sac, filled with plastic exudation, dissecting its way posteriorly to the bottom of Douglas's pouch; this mass afterwards fluctuated	—

Delivery of child.	Delivery of placenta.	Result.	Remarks.
Vaginal incision over most prominent part of tumour. Subsequent extraction and discharge of bones in several operations, extending over more than 3 months	—	R.	—
"Fœtal bones continued to escape per vaginam for more than a year"	—	R.	Very imperfectly reported.
Spontaneous opening into vagina. Opening enlarged by surgeon and bones removed; other bones subsequently discharged	—	R.	—
Spontaneous opening into vagina and rectum. Vaginal opening enlarged by finger and bones removed in several operations	—	R.	—
Spontaneous opening into vagina. Bones of skull removed piecemeal; afterwards body of child, decomposing, by traction on axilla	No attempt at removing placenta	R.	Fæcal fistula into sac remained
Incision of vagina. Bones extracted; much stinking pus escaped. Trunk adherent to wall of cyst, removed by traction with forceps	—	D.	Cyst washed out with carbolic solution. On 3rd day fæcal fistula formed. Continuous irrigation attempted, but found impracticable. Death on 23rd day from exhaustion owing to intestinal fistula.
Incision of vagina; removal of contents of cyst with forceps	—	R.	No untoward symptoms. After treatment not described.
Incision with antiseptic precautions; a quart of pus removed; subsequently some bones came away	—	D.	Cavity irrigated and dressed antiseptically; how frequently not stated. Patient died a few days after from "sepsis." No autopsy.

ON "PRIMARY LAPAROTOMY" (THAT IS, ABDOMINAL SECTION IN THE LATTER HALF OF PREGNANCY, THE CHILD BEING ALIVE) IN CASES OF EXTRA-UTERINE GESTATION.

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(*Abstract.*)

The operation was performed in the seventh month of pregnancy for persistent and increasing pain and orthopnœa. The placenta was left, drainage was attempted, but the wound could not be kept open. The decidua was discharged on the twenty-fourth day. All went well till the thirty-second day, when symptoms of the separation of the placenta began, and the patient died, with symptoms of septic intoxication, eleven weeks and a half after operation. Post mortem the placenta was found detached; no hæmorrhage of importance had taken place; it lay in a nest of intestines and adjacent organs.

A table is appended of eighteen cases of "primary" operations, with many details concerning the treatment of the placenta and cord, hæmorrhage, septicæmia, indication for operation, presence or absence of a cyst, and maternal and fœtal mortality.

The case is debated, and the "primary" operation considered.

The smallness of the number of recorded abdominal incisions for removal of the living child in the second half of extra-uterine pregnancy renders it desirable that all cases should be published with full details.

It is for this reason that the case forming the basis of the following communication is brought forward. But it is also because it resembles no case hitherto recorded, and because it suggests many considerations which must be taken into account when the whole question comes to be formulated, for which the time seems still to be far from ripe.

No attempt will here be made to discuss the whole question of the treatment of extra-uterine gestation; to discuss that of the so-called "primary" operation will be a task quite sufficiently difficult and complicated. A table of eighteen cases of this nature is here appended, and its contents are analysed.

Ellen G—, aged 42, housewife, was sent into St. George's Hospital, under the care of Mr. Pick, by Mr. Cooper of Marlborough, with an abdominal tumour, on October 13th, 1886. Mr. Pick transferred her to my care. She had been married twenty-three years, and had had three children, the last five years ago; no miscarriages. All her labours and recoveries were good; she was in bed a week only after the birth of her last child.

She had rheumatic fever twenty-five years ago, no other serious illness. Subject to dyspeptic symptoms.

The history of her present ailment was that on June 27th, 1886, she was seized with a sudden cramp-like pain in the left iliac fossa, passing across the abdomen to the right iliac fossa. She vomited, suffered much from "wind," and was in bed for a week. Mr. Cooper found a tumour in the right iliac fossa.

Since the middle of July Mr. Cooper found the tumour on the right side rapidly increasing; no swelling on the left side could be detected till the middle of August. Mr. Cooper wrote as follows:—"In the middle of August I made an internal examination; the uterus appeared normal, the body drawn up and out of position. In the latter part of September I made another examination; the neck of the uterus appeared slightly elongated, the os soft; I could not feel the body."

Since the attack in June she has had constant cramp-like pain in the left iliac fossa, at times coming on in paroxysms every few minutes. She has been getting about and doing her house-work till six days ago when she had to give up, as she was worn out by want of sleep.

Appetite variable, bowels regular, micturition difficult.

The catamenia had been regular and natural in all respects till twelve months ago, since then the quantity had diminished. At the beginning of May, 1886, the period returned as usual, being preceded by malaise for a day or two. For the first few days it was as usual, but then increased in quantity and lasted five weeks. The blood was not so bright as usual, and was accompanied by a yellow discharge. The catamenia never returned again. There has been occasional yellow discharge. She does not think she has lost flesh. She cannot lie down in bed on account of difficult respiration. For the last week she has had a cough.

(The following notes are founded on those taken by Mr. H. A. Des Vœux, resident obstetric assistant.)

On admission (October 13th, 1886).—A somewhat thin, sallow-complexioned woman, with an expression of anxiety and pain. Complains of pain in the left iliac fossa.

Pulse 88, artery hard, resp. 16 (orthopnœa), temp. 98°. Tongue large, firm, slightly coated down middle. Heart and lungs normal. Urine acid, sp. gr. 1020, clear, no albumen.

Both breasts are full, veins distended, areolæ pigmented, serous secretion can be expressed.

Abdomen irregularly distended below navel; a rounded prominence is seen above inner part of right Poupart's ligament, and another internal to left iliac spine. Palpation discovers enlargement to be generally elastic, except above pubes a little to right of middle line and nearly midway to navel, where two rounded knobs, about the size of walnuts, are felt immediately beneath the abdominal wall, and some indefinite induration extends towards the protuberance above the right Poupart's ligament.

The prominence within the left anterior superior spine is felt to move spontaneously and will be further described. This prominence is very tender, and is oval, rising to the false ribs, and extending inwards halfway to the middle line from the anterior superior spine, and downwards to Poupart's ligament. The rest of the abdominal enlargement is indefinite and cannot be accurately mapped out.

Special description of protuberance on left side.—The protuberance contains a body easily felt to be a fœtus, of which the limbs are plainly made out. Its long axis is nearly parallel with Poupart's ligament, but a little more horizontal; the protuberance is completely dull on percussion, but between it and Poupart's ligament there is resonance. The fœtal heart is plainly heard about one inch internal to the left anterior superior spine.

The protuberance above the right Poupart's ligament is all but absolutely dull; with these exceptions the whole abdomen is tympanitic.

On *auscultation* no sound is heard but the fœtal heart.

On *vaginal examination* the cervix is low down, almost in contact with the tip of the sacrum, very soft and relaxed, admitting the tip of the finger for about an inch. In front of it, occupying the whole breadth of the pelvic excavation, is rounded, dense, slightly elastic hardness.

Bimanually.—Impulse is communicated to the swelling in front of the cervix from the protuberance above the right Poupart's ligament, and this gives the impression of being the enlarged and pregnant uterus. The induration to the left (fœtus) cannot be grasped bimanually.

Sound in the bladder goes in the direction of the plane of the brim of the pelvis, or towards the sacral promontory, and can be felt in its length on the right side of the fundus vaginæ. It cannot be directed forwards into the usual situation of the bladder. The bladder is elastic, and measures four inches from the meatus.

A consultation was held with the surgeons, and various courses debated.

It was not thought justifiable to leave matters alone on account of the patient's condition, especially increasing pain, sleeplessness, and orthopnœa. For the same reason it was not thought justifiable to wait for the viability of the child, especially as experience shows the expectation of the life of extra-uterine children to be particularly bad. To wait not only for the viability of the child but also for the full time of pregnancy, and not only for that but for the death of the child, and not only for that but for the abolition of the placental circulation, was out of the question, and, as the result showed, would not have improved the patient's chances.

To kill (or attempt to kill) the child seemed to be both more difficult and dangerous than to cut it out, especially as it seemed to be immediately beneath the abdominal walls, and no placenta could be felt near it.

Against operation during the life of the child were to be placed the known great risks of the operation, but it was decided on all hands that this was the only proper course.

The existence of extra- and intra-uterine pregnancy was thought probable, the mass above the right Poupart's ligament being very suggestive of the pregnant uterus as distinct from the uterus simply enlarged in extra-uterine pregnancy, and the sound was not passed.

On October 19th, at 9 a.m. (the pubic hair having been partly shaved the day before, the abdomen washed with carbolic lotion, and an antiseptic dressing applied), the bowels were opened by an enema and the urine drawn with a catheter.

The instruments were laid in a solution (1 in 20) of carbolic acid for half an hour before the operation, the drainage-tubes and silk for twelve hours.

Operation.—Under ether an incision three inches long was made over the most prominent part of the tumour, nearly parallel with Poupart's ligament, and the layers carefully divided. One or two small veins were tied with

fine catgut. The muscle (obliquus internus) was found with its fibres running parallel to the incision, and none of them were divided, but separated (as was intended). The abdominal wall was divided until the fœtal buttocks were reached. No sac was seen over them. The layer immediately covering the fœtus was a dull white membrane. Almost at once, on exposing the fœtus, a coil of pink, healthy, small intestine rolled over it from the right side. The fœtus was free in the abdominal cavity. No liquor amnii was seen. Silver sutures were now passed through the whole thickness of the wound; the ends belonging to each side were twisted together and clamped in a clip forceps. The fœtus was lying head downwards in the left iliac fossa, with occiput posterior and to the left side (fourth vertex portion). The feet were sought, and it was extracted by them, the face being born before the occiput. The incision just admitted of the birth of the head. The heart was beating. (For description of fœtus see below.)

The fœtal end of the cord was tied, and it was then divided on the placental side of the ligature and allowed to bleed freely, which it did to the extent of several ounces, the blood at first gushing out, and being encouraged to flow by stroking down the cord between the finger and thumb. On the child's vertex a patch of thin, sodden-looking membrane was seen, and, except a shred of similar material removed from the wound (probably torn from the head during its delivery), no membranes were seen or felt. The hand (washed in corrosive sublimate solution, 1 in 1000) was passed into the wound, and found itself free in the abdominal cavity. The cord was traced towards the brim of the pelvis a little to the left of the middle line. The mass above the right Poupart's ligament felt distinctly cystic, like the pregnant uterus. No further exploration of the abdomen was made, in order to avoid injuring the placenta. A sponge passed into the abdominal cavity returned dry. The upper part of the incision was then closed by the sutures. Between the

lowest suture and the lower angle of the wound, the cord and two india-rubber drainage-tubes as large as the little finger were inserted, and the tubes attached by fine silk to the lowest sutures. The cord was allowed to hang over the left hip. The wound was dressed with iodoform wool, secured by a gauze Spica bandage and a many-tailed flannel belt. The operation lasted three quarters of an hour, and the patient was very well at the end of it.

Progress of the case.—With the exception of a transient rise of temperature on October 19th to 99·5°, on 20th to 100·5°, on 21st to 102·6°, and on 22nd to 100·2°, the temperature was normal till 25th, when another transient rise to 101·6° occurred. From this time to November 21st (thirty-three days) it was normal.

Colostrum appeared in the breasts on the third day after operation.

October 23rd (fourth day after operation).—A little dry serous discharge was seen on the dressings next the skin, and the dressings were removed under the carbolic spray. The wound appeared to be entirely united, the cord dry up to three quarters of an inch from the wound, where it was still moist and fresh.

"The whole of the left side of the abdomen is now resonant, the tumour in the right side has reached the level of the navel. To auscultation it is dumb; it feels less like the pregnant uterus than like a thin-walled cyst. Dressing applied as before."

26th.—The bowels acted freely after a dose of castor-oil.

29th.—The patient having disturbed the dressings, the wound was again dressed under the spray. It was looking well, the cord was dry as far as half an inch inside the wound, where it was still whitish and moist. It was cut off, and the stitches removed. The tubes were found blocked with organised lymph and were removed.

November 2nd.—A little serum having come through,

the wound was dressed again. "The swelling on the right is smaller, feels more compact and less cystic." She was moved to the ordinary obstetric ward.

9th.—"The lower part of the wound where the drainage-tubes were is a granulating sore, and is dressed with zinc ointment. Still colostrum in breasts. General condition good. The tumour on the right has a boggy feeling and was thought to be placenta."

11th.—Loss of blood began from the uterus.

12th.—Passed a thick decidual membrane, which was a complete cast of the uterine cavity.

19th.—"The incision measures two inches and is completely healed. The lower abdomen is still markedly distended. The oval swelling (supposed to be placenta) is considerably smaller.

"*Per hypogastrium*, as on October 13th, with the following exceptions: The fœtal tumour in the left iliac fossa is gone; the two small lumps above described are now apparently amalgamated, and lie a little to the left of the middle line, rather nearer the navel than the pubes. The oval swelling above the right Poupart's ligament is considerably smaller, and does not reach the level of the navel by an inch, and is about three inches broad. Its right border does not reach the anterior superior spine by half an inch. It is much less elastic and more solid than before, but immediately above the right pubic spine is a rounded and more prominent area about two inches in diameter, which feels like a thin-walled cyst. With the exception of this area the whole abdomen is tympanitic; the induration is nearly dull. To auscultation the dull area is dumb except for the sounds of the movements of intestines. *Per vaginam*, as on October 13th.

"Bimanually, as on the same date, the mass above the right Poupart's ligament seems to form a solid body with the induration in the roof of the vagina the size of a large fœtal head. The cervix feels as before, soft and relaxed. The finger can be passed to the os internum and could easily be passed through it."

20th.—The patient was so well that she was allowed to be up for several hours.

21st, at 7 a.m.—She was seized with a sharp clawing pain over the region of the left kidney, and the following note was made: "*Per hypogastrium.*—Slight tenderness above the pubes; abdomen generally resistant. At 12.15 p.m. nearly the right half of the abdomen was dull, the line of absolute dulness being half an inch to the right of the middle line. At 2.30 p.m. the line of dulness coincides with the linea alba. The right half of the abdomen shows somewhat increased resistance, but no hardness. It does not become resonant on change of position. The left side of the abdomen is natural. Over the seat of pain nothing can be discovered. On turning the patient, however, for the second time on her left side, the right side became resonant, and did not again become dull on resuming the dorsal position." Legs drawn up, pulse 100, little if at all fuller than usual. No marked pallor. Tongue clean.

At 11 p.m. of the same day she had a rigor; temperature 104°, pulse 144 and very feeble.

22nd.—Much better. Temp. 97·6°, pulse 100. No abdominal tenderness, though some distension.

From this date onwards the patient had repeated rigors, the temperature reaching 105° repeatedly, and once 106°. Intermissions between the rigors. The patient seemed very little the worse for them for a long time, took food well, and never had sweet breath, nor abdominal tenderness, though there was some distension.

29th.—Had a sore-throat with white patches of oïdium albicans ("thrush").

December 4th.—The throat was quite well, having been treated by glycerinum boracis.

6th.—A large parotid swelling appeared on the right side; this began to get smaller on the 10th.

12th.—A similar swelling appeared on the left side; it began to decrease on the 17th. Shortly afterwards both had entirely disappeared. The tongue was red and dry during the attack and feeding difficult.

On December 6th and on January 3rd, the right half of the abdomen became dull again, as before.

17th.—The left superficial epigastric vein became enlarged, the blood running upwards. The mass of induration became larger and less definite.

From December 10th the general condition changed for the worse, the patient becoming thinner, hollow-eyed, low-spirited, and restless.

January 2nd, 1887.—Acute abdominal pain, tenderness, and vomiting of watery fluid and food, never offensive or green. Temperature fell to 97°; pulse 132, very weak and compressible. Patient much collapsed. Next day the right half of the abdomen became dull as before, but on the 4th resonant again, and the left epigastric vein less prominent. Vomiting continued till the 5th after food, which was stopped, and nutrient enemata given.

6th.—Patient was much feebler, and her pulse much weaker. Cocain gr. ¼ was given every four hours, and feeding by the mouth resumed; the vomiting did not recur. The abdominal distension had increased, and no indurated masses could be felt anywhere. *Per vaginam*, as before, no soft spot.

Next day (January 7th) the abdomen was more distended, no pain, slept better, has taken food by the mouth without vomiting, pulse 144, not weaker. She died the same day.

There were never any intestinal symptoms, and the urine was throughout practically normal except towards the termination, when there was a little albumen.

A careful dissection of the child was made for me by Mr. F. A. Barton.

Sex female. It weighed 2 lbs. 10 oz. Its length was 15 inches (37½ cm.). There was a sort of cap of sodden membrane (amnion) on the vertex, which was covered with dark hair. The face had been much compressed, the nose flattened. Eyelashes just beginning to grow on both lids. Slight amount of vernix caseosa in flexures of limbs. Nails

perfect on hands, just commencing on great toes, none on other toes.

Diameters of head: Fronto-mental = 3¾ inches + (9½ cm.). Occipito-mental = 3½ inches + (9 cm.). Occipito-frontal = 3½ inches − (8½ cm.). Head deformed. Large intestine filled with meconium.

This development will be seen to correspond to the seventh month.

Pregnancy must therefore have dated from March, and the periods in April and May must have occurred during pregnancy. It was suspected in October from the character of the (last) period in May that pregnancy might have begun before May.

A minute *sectio cadaveris* was made for me by Mr. R. Pinhorn. *Autopsy* fifty-two hours after death.

Height 5 ft. 3 in. Hair dark brown, turning grey.

The arteries had been injected with red colouring matter through the arch of the aorta. Body much emaciated; rigor mortis slight. Some purple discolouration of inner sides of thighs. Abdomen distended but not greatly. Line of incision seen in upper part of left iliac region healed firmly, slightly discoloured, slightly raised above the general level. Same induration is felt rising two inches above the pubes, running parallel with the right Poupart's ligament. No other induration can be felt. The abdominal distension is bounded below by the induration.

On opening the abdomen the omentum is seen covering the intestines and adherent over them. Between the coils of the intestines is seen a little yellowish lymph. No acute peritonitis. A coil of colon about as thick as a man's upper arm, three and a half inches in diameter, runs from the left hypochondrium to the right iliac fossa, and corresponds with the principal abdominal distension bounded below by the induration. The intestines are universally adherent by pretty firm adhesions, the lower coils being specially affected. The remains of the cord are seen running from the lower angle of the scar to the

placenta. The placenta is found lying in the mass of induration above the pubes, and is bounded in front and above by the displaced transverse colon, in front and below by omentum.

The pelvis with its contents was removed, and put into a solution of corrosive sublimate, 1 in 1000. The front of the pelvis was then sawn out. A probe passed into the bladder in front and to the right of the other pelvic contents.

The sigmoid flexure passed in front of the sac containing the placenta, as far as the middle line.

The sac containing the placenta was opened by a vertical mesial incision, cutting through false membrane only, the colon and omentum having been removed.

The placenta was seen lying in the sac as a round ball as large as a fœtal head, and of a dark maroon colour. On passing the fingers round it, a few delicate and one or two firm adhesions were found between the placenta and sac, most in both posterior quarters. Otherwise the placenta was detached.

There was no gas or fæces in the sac. The inside of it was covered by fibrin, some almost entirely decolourised. This was a thin layer, there were no masses of blood. On removing the fibrin, the general colour of the sac wall was green. No vessels were seen injected on the surface, nor any plexus found in the substance of the adventitious sac.

The sac wall varied in thickness from $\frac{1}{16}$th to $\frac{1}{8}$th of an inch. It was adherent to the sigmoid flexure in front and below, to the colon in front and above, to the bladder in front and to the right, to the uterus and tubes below. The sac communicated below with a small abscess cavity, but nowhere with intestine.

The pelvic parts were so firmly matted together that the relations of parts could not be satisfactorily made out, but the left tube could be seen in its whole extent, apparently unaltered.

The relations of the right tube to the sac could not be made out. The right ovary could not be found. The left

ovary could not be distinctly made out, though a body was found attached to the left Fallopian tube which under the microscope presented tissue like the hilum of the ovary.

The placenta was about the size and shape of a fœtal head, measuring 5 in. × 4 in. × 3½ in., weight 1 lb. 4 oz. (shown.)

The fœtal surface, which looked upwards, backwards, and to the left, was marked by the attachment of the cord, which entered on the left side of the sac. The fœtal surface was also marked by a remnant of membranes, which hardly extended beyond the placenta, and in which the amnion could not be made out. The fœtal surface measured 5 in. × 4 in.

The consistence of the placenta was firm and very slightly elastic, like the post-partum uterus. The surface was chocolate coloured. On section it was like dark purple clot, nowhere decolourised.

The *cord* in its upper part was pale, and adherent to the adjacent tissues. Within the sac it was moist, brownish, and gelatinous like that of a macerated fœtus.

Heart.—Tissue pale, soft; weight = 8 oz. Tricuspid valve thickened; otherwise healthy.

Liver 4 lbs. 2 oz.; fatty.

Lungs.—Slight adhesions on left side. Both bases congested and œdematous. Weight 2 lbs. 10 oz.

Spleen 4 oz.; pale, soft, otherwise healthy.

Pancreas healthy.

Kidneys 12 oz; pale, capsules non-adherent. Cortex narrowed. Each contains a deposit like mortar, with some pus.

Bladder healthy. Contained a small calculus (size of a pea), consistence of similar character to renal deposits, soft and mortar-like.

Intestines and Stomach healthy.

Remarks on this case.—The pregnancy probably began in March, the prolonged menstruation in May may have coincided with some giving way of the sac, and the attack

of pain in June was still more probably due to this cause; no tumour on the left side could, however, be felt till August.

The fœtus occupied the left iliac fossa; the pain was also in the left iliac fossa. The left tube was intact, so that the pregnancy (*if* left-sided) must have been originally abdominal or ovarian.

The state of the right appendages could not be made out.

No cause for the extra-uterine pregnancy appears in the history.

The pain in the left iliac region may have been due to fœtal movements. This part of the abdomen was markedly tender.

The placenta was thought to be situated where it eventually proved to be, but the tumour in the right of the lower abdomen was suspected to be the pregnant uterus from its shape and feeling, and this suspicion increased till the discharge of the decidua, the absence of a double uterus being believed.

It is important to remember that the placenta may feel *cystic*, and that no sound whatever was heard over this one.

The cystic feeling remained for a considerable time after the operation.

A point in the operation to which attention may be drawn is the treatment of the placental end of the cord. This point has been alluded to in the table appended, but no notes of its treatment can be found in any of the cases there recorded. It seems, however, that it is not unlikely to be a point of considerable importance (one way or other) as regards the likelihood of detachment of the placenta and bleeding. The blood is of course under the pressure of the vessels of the fœtus, and in this case it spouted out to the amount of several ounces. The placenta, however, still contained a good deal of blood.

An attempt was made to drain, but, as the wound showed a determined intention to close, it was allowed to do so.

The patient will be seen to have completely recovered from the operation.

The decidua was passed on the twenty-fourth day (November 12th), and mischief was looked out for, especially the danger of detachment of the placenta.

On the thirty-second day (November 20th) the patient was so well that she was allowed out of bed. This, however, was the last day of immunity, and from this day her fatal illness began.

The curious temporary dulness of the right half of the abdomen is hard to explain; it was suspected to be due to blood, but there was no pallor. Perhaps it was an escape of fluid from the region of the placenta. The subsequent course was that of septic intoxication rather than septicæmia.

The question of opening the abdomen a second time was repeatedly debated. But several reasons appeared to point in an opposite direction.

In the first place, it could not be certain that the placenta was not still attached in part, and capable of furious hæmorrhage. This has happened as late as four months after the death of the child (cf. Litzmann, loc. cit., SS. 396-7).

In the second place, the absence of a cyst rendered the matter more difficult. The placenta was diagnosed as being situated on the bladder; it was also most likely on the intestines, from which violent and uncontrollable bleeding might take place, and it might be divided by the incision.

In the third place, the patient maintained her strength so well, in spite of her symptoms, almost to the very last, that her chances were thought better if she were allowed to eliminate the chemical poison of septic intoxication, than if an incision were made into an abdomen which had already been opened, and in which adhesions had very likely obliterated the peritoneal cavity, and removed ordinary landmarks.

The diagnosis of septic intoxication appears to be cor-

rect, and its source seems to have been the intestinal tract infecting the placenta after this had become a foreign body. All the symptoms point to the operation having been thoroughly aseptic; indeed, an interval of four and a half weeks' satisfactory recovery entirely precludes any other view.

The course of the case shows that death was entirely independent of the operation, and, as far as the fatal result is concerned, it should be considered together with those cases in which the child has died in the abdomen, and the fœtal circulation in the placenta has thus ceased, remembering, however, that in this case the blood was allowed to escape as freely as possible from the placenta through the cord.

The effect of this treatment may perhaps have been shown in the absence of hæmorrhage, which has proved so fatal in other "primary" cases, *i. e.* cases done during the life of the child.

The cases which illustrate the way in which the placenta behaves, if left behind, and if not eliminated (as is usually the case) are few.

Jessop's case resembles mine in two respects, that the operation was performed during the life of the child, and that the fœtus was free among the intestines, but the placenta was cast out. In other cases death occurred too soon after the operation to throw much light on the question of the behaviour of the placenta.

In Dr. Braithwaite's case the full-grown fœtus had been dead about three weeks; it was, like mine, free among the intestines. The placenta fitted on the top of the uterus like a cap, and was spread out on its posterior surface "and the neighbouring parts." "The placenta never came away, except a morsel about twenty grains in weight, which protruded at the upper angle of the wound on the sixth day." Two months after the operation "no trace of the placenta could be detected, except a small ring of dense tissue situated behind the fundus uteri and about half an inch from it. There was not a trace of

placenta on the roof of the vagina and posterior surface of the uterus, where it had been attached" ('Obstet. Trans.,' vol. xxviii, 1886, p. 33).

In Negri's case ('Annali di Ostetricia,' 1885, p. 127) the fœtus had died eight months before operation, no placenta was found, and none came away after operation.

Consideration of the "Primary" Operation.

The appended table is based on those of Litzmann, Maygrier, and Lusk, the original authorities, wherever obtainable, having been consulted. One of Maygrier's cases (No. 13 "Hofmeir," in his table), and copied by Pinard ('Dict. des Sciences Médicales,' tome xi, p. 124), had to be omitted because the child was macerated. How this error crept in I cannot say.

The *total number* recorded is 18, of whom 2 only recovered. The *maternal mortality*, therefore, has been 16, or 88·8 per cent.

The alleged cause of maternal death was partly or entirely *hæmorrhage* in 4, or 22·2 per cent.

But *hæmorrhage*, generally profuse, *during the operation*, is mentioned in 9, or 50 per cent. This was *from the placenta* in most cases. *Secondary hæmorrhage* occurred in 4, or 22·2 per cent., in one case as late as the thirteenth day.

The *cause of death* was partly or entirely *septicæmia* or *peritonitis* in 8, or 44·4 per cent. This cannot, of course, be entirely separated from the effects of hæmorrhage as a predisposing cause.

The *placenta was completely removed* in 4 cases, or 22·2 per cent., with a mortality of 3, or 75 per cent.; *partly*, in 2 cases, or 11·1 per cent., with a mortality of 2, or 100 per cent. In most cases death occurred from hæmorrhage. It must, however, be noted that one of the two cases which recovered (Martin, No. 16) was treated by removal of the placenta.

As regards *indication for the operation, it was* :—

Rupture of the sac	in 2
Threatened rupture	in 2
Violent pains	in 5
Constant pain, with hectic or other symptoms	in 4
Intestinal obstruction . . .	in 1
To save the life of the child . .	in 1
As an operation of election (*i. e.* urged by general considerations, the time being chosen)	in 3 (? 1)

The sac was absent in 2 cases (Jessop and Champneys. In Jessop's case the placenta was cast out in the usual manner, in mine it was retained, and was the cause of death.)

The treatment of the placental end of the cord is only mentioned in 3 cases, but in all but mine it was most likely tied.

The immediate fœtal mortality was 11, or 61·1 per cent.

Fœtal deformity existed in 4, or 22·2 per cent.

It will be observed that of the two cases which recovered, one (Jessop, No. 6) was a case of abdominal pregnancy without a cyst. There was no hæmorrhage during the operation, and the placenta, which was left, decomposed and came away between the fifth and thirty-second days.

In Martin's case (No. 16) the placenta was removed, and the sac drained by the vagina as well as by the wound. There was considerable bleeding during the removal of the placenta.

It will be seen that none of the *fatal* cases lived longer than four days except mine and Litzmann's (sixteen days). In this case, like mine, the patient did well at first; in his case, however, there was violent bleeding on washing out the sac on the thirteenth day, and death occurred from sepsis. The placenta was left.

The rule seems now pretty generally acknowledged to leave the placenta. As regards this, while many women have lost their lives after unsuccessful attempts to remove

it, in one of the two successful cases it was removed. The immediate danger of removal is of course great, but the danger of leaving it is also great. In any case where extirpation of the cyst is fairly practicable, I should, for my part, certainly attempt it; such cases, however, will be very rare.

As to the Justifiability of the Primary Operation.

It has been abundantly proved that the removal of the child in the second half of an extra-uterine pregnancy is highly dangerous. The danger arises from the behaviour of the living placenta. There are, however, cases in which it is impossible to withhold the hand, and this seemed to be one of them.

It will be observed that, as far as the result of this case was concerned, it should not be forgotten that it belongs rather to the class of cases in which the child has been for some time *dead* than to those obviously associated with it, inasmuch as the operation was perfectly successful and the result was apparently due to septic intoxication of the separated placenta at a long interval after the removal (which is in this aspect the same thing as the death) of the child.

The reasons why no second abdominal section was performed have already been given. No hitherto recorded case threw any light on this; the abdominal conditions were very doubtful and the patient maintained her strength well till towards the end. Had a second operation been decided on it would have been somewhat difficult in the absence of the cord, for it would have been useless to open the old incision, so far away was it from the placenta, and an abdominal incision in the middle line would have been decidedly the best. It will be well to bear this in mind for the future.

The cause of the fatal disease seems to have been septic intoxication, and this strong opinion during the

progress of the case frequently led to the hope that the patient had received her last dose of poison.

It will be observed that although the placenta was implanted on the intestine the patient never had any intestinal symptoms such as have been recorded by Freund and others.

In any future case like that here recorded (the child being free in the abdominal cavity, and the drainage of the wound proving impossible on account of its determination to close, or the placenta being deliberately left) it may perhaps be well to cut down and remove the placenta if symptoms of septic intoxication arise. This I should do on another occasion myself, but (so unlike are these cases from one another) without much certainty of finding similar conditions to those here described.

The number of children which are ill-developed, sickly, or deformed in cases of extra-uterine gestation, is so large that the value of the child's life is much reduced, and appears to be insufficient to justify additional risk to the mother.

Table of Operations performed during the latter half

No.	Reference and date of operation.	Period of pregnancy.	Indication for operation.	Sac.	Treatment of placenta.	Placental end of cord.	Hæmorrhage. Period. Cause.
1	A.D. 1813. Heim (Rust, Magazin für die Gesammte Heilkunde, Bd. iii, S.1 ff.). Quoted from Litzmann	Full time (?)	Operation of election (?)	Limbs of child had already pierced sac	Left	?	Not mentioned
2	A.D. 1842. Hauff (Medicinische Annalen, edited by Puchelt, Chelius, and Naegele, Bd. viii, S. 439 ff., Heidelberg, 1842). Quoted from Litzmann	35 weeks	Repeated labour-like pains, lameness, rapid pulse, great weakness. Immediate indication: violent labour-like pains	Thin	Separated from uterus and rectum by fingers, from gut and mesentery by scissors; a good third part of it left (tied with ligature); bleeding slight, except from divided arteries (? !); drainage from lower angle of wound	?	About a pound of black clotted blood found at the autopsy between the coils of intestine against the spinal column, apparently from the remainder of the placenta, which was firmly implanted over the right ovary (where it had been ligatured), over the ascending colon, and over part of the ileum
3	A.D. 1863. Koeberle (Gaz. de Strasbourg, 1863, Nr. 10, p. 160 ff.). Quoted from Litzmann	Full time ("15 mos." ? ! ! !)	Symptoms of peritonitis, intestinal obstruction, retention of urine, fæcal vomiting	Present	Occupying whole of accessible part of sac; torn during delivery of child; violent bleeding; stopped by sponge pressure; placenta left	?	Violent bleeding from separation of placenta during operation
4	A.D. 1870. Sale (New Orleans Med. Journ., Oct., 1870, p. 727). Quoted from Maygrier and from Wilson (*infra*)	Children viable	Threatened rupture of sac	Present	Removed	Not mentioned	Some bleeding on incision of sac

of Pregnancy and during the Life of the Child.

Result.		Maternal death.		Autopsy.	Remarks.
Mother.	Child.	Period.	Cause.		
+	Survived ("a large strong boy")	40 hours	Intestines prolapsed during operation, and were not replaced till the evening of the second day	Apparently normal placenta still adherent to the inner surface of the large membranous sac, which was not apparently connected with the intestines	—
+	+ 50 hours after birth (limbs deformed)	24 hours	Died with symptoms of increasing tympanites, vomiting, hiccough, delirium	Hæmorrhage from the remaining part of the placenta	—
+	+ next morning; born deeply asphyxiated, 3017 grains weight, 44 cm. length	Immediately after operation	Vomiting; syncope	—	—
+	Both living 6 weeks after operation	4 days	Septicæmia (?)	None obtained	Intra- and extra-uterine twins. Both alive 6 weeks after operation.

No.	Reference and date of operation.	Period of pregnancy.	Indication for operation.	Sac.	Treatment of placenta.	Placental end of cord.	Hæmorrhage. Period. Cause.
5	A.D. 1872. Meadows (Obst. Trans., vol. xiv, p. 309 *seqq.*)	29–30 weeks, appearances of at least 7 mos.	Violent cramp-like pains	Present; attempts to remove it	Separated intentionally	Placenta removed	Violent hæmorrhage during removal of placenta, ceasing when this was accomplished; ? from syncope of patient
6	A.D. 1877. Jessop (Obst. Trans., vol. xviii, p. 261 *seqq.*)	33–34 weeks	Pain, vomiting, wasting, rapid feeble pulse	Absent	Left undisturbed	Clamped 2 inches outside wound, acted as drain	None
7	A.D. 1877. Gervis (Brit. Med. Journ., 1877, Dec. 22, p. 884)	36½ weeks	Vomiting, pain, failure of strength	Present	Left undisturbed, large drainage-tube	"Tied and divided" (? placental end)	None; abundant escape of bloody serum
8	A.D. 1876. Spiegelberg (Arch. f. Gyn., Bd. xiii, S. 74 ff.)	About full time	Rupture of sac, peritonitis, intestinal obstruction, fæcal vomiting	Present	Divided by incision, violent bleeding; partly removed after ligature; drainage by cord and a catheter	?	Violent hæmorrhage from incision of placenta during operation
9	A.D. 1877. Heywood Smith (Obst. Trans., vol xx, p. 5)	No mention	No mention	Present	Torn during operation, torn part tied and cut off, the rest left; drainage-tube	Not mentioned	Not mentioned
10	A.D. 1878. Fraenkel (Arch. f. Gyn., Bd. xiv, S. 197 ff.)	32½ weeks	Pyrexia, constant labour-like pains, vomiting, threatened rupture of sac	Present	Separated during the operation, except a small portion, tied and left; drainage-tube	Placenta removed	Violent bleeding during operation from separation of placenta; some bleeding after operation
11	A.D. 1880. Vedeler (Norsk. Mag. f. Laegevid., 1880, Bd. x, p. 86; Centralblatt f. Gyn., 1881, S. 224)	Full time	Rupture of sac, peritonitis; child alive	Present	Left	Not mentioned	Bleeding on opening the sac

Result.		Maternal death.		Autopsy.	Remarks.
Mother.	Child.	Period.	Cause.		
+	+ next day	5 hours	Hæmorrhage during operation; shock; consciousness hardly recovered	No fresh bleeding	—
Recovered	Lived and throve (died, æt. 11 mos., of croup)	Recovered	Recovered	Recovered	Placenta decomposed, and came away between the 5th and 32nd days; vomiting after operation; severe rigor 10th day
+	+ 6 hours	56 hours	Peritonitis and profuse "hæmorrhagic loss"	In peritoneum a few patches of peritonitis and 1½ pints of bloody serum; placenta decomposed; cyst wall destroyed, having given way largely	Death apparently from escape of decomposed contents of cyst into peritoneum.
+	Lived and throve at first (died, æt. 3 mos., of inanition, hand-feeding)	A few hours	Hæmorrhage during operation; collapse	—	—
+	+ 40 minutes	22 hours	Not mentioned	—	—
+	+ 24 hours	Soon after operation	Bleeding during operation from separation of placenta	—	—
+	+ 2 days	24 hours	—	—	—

No.	Reference and date of operation.	Period of pregnancy.	Indication for operation.	Sac.	Treatment of placenta.	Placental end of cord.	Hæmorrhage. Period. Cause.
12	A.D. 1880. Lawson Tait (Obst. Journ., 1880, p. 577, and Brit. Med. Journ., 1880, p. 737)	8 mos., "child evidently mature"	Severe pain	Present	Left	Not mentioned	Not mentioned
13	A.D. 1879. Schroeder, see Hofmeier (Zeits. f. Geburtsh. u. Gyn., Band v, S. 115)	34½ weeks	On account of the child	Present	Left; drainage through vagina; cyst plugged with salicylic wool	Not mentioned	Considerable bleeding during operation, cyst plugged; bleeding on 2nd day, removal of plug
14	A.D. 1880. Wilson (Amer. Journ. Obst., vol. xiii, 1880, p. 821)	39 weeks	Operation of election	Present	Left; cord brought out through wound	Not mentioned	"Operation almost bloodless;" no bleeding afterwards
15	A.D. 1880. Litzmann (Arch. f. Gyn., Bd. xvi, SS. 324 & 362)	About 39½ weeks	Operation of election; hectic condition; child alive	Present	Left	Not mentioned	No bleeding during operation from the sac; violent bleeding on 13th day during washing out of sac
16	A.D. 1881. Martin (Berl. klin. Woch., 1881, S. 775)	About 7 mos.	Pain destroying sleep; emaciation	Present	Removed; drainage by wound and vagina	Not mentioned	Considerable bleeding during operation from separation of placenta, 3 deep ligatures stopped it
17	A.D. 1881. Netzel Hygeia, April 29, 1881. (Quoted from Lusk, Brit. Med. Journ., Dec. 4, 1886, p. 1089)	?	?	?	?	?	Placenta divided, sharp hæmorrhage
18	A.D. 1886. Champneys (this paper)	About 7 mos.	Pain destroying sleep, orthopnœa	Absent	Left	Allowed to bleed	None at any time

Result.		Maternal death.		Autopsy.	Remarks.
Mother.	Child.	Period.	Cause.		
+	Lived and throve (7 months after operation)	4 days	"Protracted shock"	—	—
+	Lived and throve (6 months after operation)	36 hours	Meteorism, vomiting, pyrexia, failure of pulse	—	—
+	Lived and throve (3 months after operation)	90 hours	Septicæmia	Three distinct placentæ; no peritonitis	Attempt to remove sloughing placenta on 4th day; found impossible.
+	+ ½ hour; deformed by pressure	16 days	Sepsis; did well till 12th day	Pyelo-nephritis	Remains of placenta came away completely on 16th day.
Recovered	+ soon after operation; encephalocele and club-foot	Recovered	Recovered	Recovered	—
+	+ 48 hours	48 hours	—	—	—
+	+ soon after operation; deformed by pressure	11½ weeks	Chronic septic intoxication began in 5th week	Placenta lying, almost completely separated, in a nest of intestines, bladder, &c.; a little fibrin; no signs of considerable hæmorrhage; no secondary deposits	Complete recovery from operation; death from chronic septic intoxication, probably from intestinal tract infecting separated placenta

A CASE OF EXTRA-UTERINE PREGNANCY IN WHICH ABDOMINAL SECTION WAS PERFORMED DURING THE LIFE OF THE FŒTUS AT THE THIRTY-FIFTH WEEK OF GESTATION.

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Abstract.

THE patient was thirty years of age, and had had one child nine years before. She was admitted into University College Hospital when about four months pregnant. For six months she had suffered from almost continuous hæmorrhage, but this ceased about the time when conception took place. She then suffered from attacks of pain in the right iliac fossa, and when pregnancy had advanced into the fourth month, she had severe pain in that situation, hæmorrhage from the uterus, and general peritonitis. A decidual membrane was also expelled. When admitted in February, 1885, she suffered from peritonitis. She was kept in hospital until August. The growth of the cyst and of the placenta was observed and described. In the thirty-fifth week the abdomen was opened and a living child removed. The placenta was left. The subsequent progress of the case towards recovery is detailed.

A patient, thirty years of age, was sent into University College Hospital on February 2nd, 1885, by Dr. Bastable, of Welbeck Street, with a swollen and painful abdomen, which he considered to be due to peritonitis from rupture of a tubal pregnancy. She said that menstruation had been regular until ten months before, from that date it

became irregular, was liable to come at any time, last for a day or two, then cease for a few days and return again. She lost a great deal, and was not free from hæmorrhage for more than four days together. The discharge was bright red blood. She had no pain with it. This lasted for six months, and then the patient had an attack of fever—she thinks malarial—in Jamaica. She had some medicine for it, and she was not poorly and did not lose any blood afterwards until a fortnight ago, January 21st, and on January 22nd she passed a mass which, on examination by myself, proved to be decidua. She was in Jamaica two years, and since her return to England on December 6th, 1884, she has had on five or six occasions severe pain in the right iliac region. These attacks lasted two or three days; the last was a fortnight ago, when Dr. Bastable was called to her and found her suffering from what appeared to be peritonitis. At the time of the occurrence of the first attack of pain she noticed a swelling in the right groin which has varied from day to day since. The urine is abundant, and micturition accompanied by shooting abdominal pains. Defæcation is somewhat painful. Bowels are confined. She has lost a great deal of flesh during the last ten months. She has also suffered from nausea and flatulence. Since December 6th she has "brought up blood." This is bright and streaks the phlegm which collects in the night and apparently comes from the throat. She has been subject to quinsy, having had eight or nine attacks of it. Four years ago she is said to have had an abscess in the chest, and to have expectorated matter in considerable amount for six weeks.

Patient began to menstruate at thirteen years of age; she was always regular; the flow lasted seven days, was moderate in quantity, and not accompanied by pain.

She was married first at seventeen and again at twenty-seven, that is five years ago. She had one child nine years ago, and no miscarriages.

Her labour lasted eight days, was very difficult, but not

instrumental. There was no post-partum hæmorrhage. She got up on the fifteenth day and caught a cold, and had to keep her bed then for six weeks with inflammation.

On admission the patient was thin, anæmic, and sallow. The heart and lungs appeared to be healthy. Pulse 88, temp. 99° F. The breasts presented no sign indicative of pregnancy. The abdomen was somewhat distended. A swelling could be felt in the hypogastrium extending up to within a finger's breadth of the umbilicus. It extended farther on the right than the left side of the middle line. It felt like an enlarged uterus. The abdomen was resonant everywhere except for three inches above the pubes in the right inguinal region.

There was a little sanguineous discharge in the vagina. The cervix was in the centre of the pelvis; it was large, elongated, softish, and moveable. The os was patulous; there were no fissures in the lips. The body was anteverted, and apparently somewhat enlarged, but its volume could not be distinctly made out. It was less moveable than normal. No tumour could be felt in the pelvis, but a swelling was discovered high up in the brim on the right side, which was continuous with the body of the uterus. The uterus was drawn to the right side. She was ordered an iron mixture with iodide of potash.

On February 7th and 8th, the patient had a severe attack of pain in the left side of the abdomen, which was subdued by hot fomentations and morphia. The quantity of urine passed in the twenty-four hours was sixteen ounces; it contained amorphous urates.

On the 9th, the tumour was distinctly larger, especially on the left side and upwards. The upper border reached to the upper border of the umbilicus. It was very tender. The results of vaginal examinations as on last examination; there was no blue colour of the vagina.

On the 14th, the upper border of the tumour in the middle line reached three quarters of an inch above the umbilicus, and about half an inch higher everywhere else than on the 9th. It was still somewhat tender.

On the 23rd, the tumour reached higher by one inch; the left side was softish, resonant, and evidently covered with intestine. In front and rather to the right of the middle line was a prominence which reached to within three fourths of an inch of the umbilicus, and had the shape of an enlarged uterus. There was still some tenderness over the tumour. She was sick yesterday.

On March 2nd, the upper border of the tumour on each side was on a level with the umbilicus, but there was a prominence three inches in width at the top of the tumour, which extended two inches higher than the umbilicus, and felt like a roundish or oval solid mass placed at the top of the tumour and moveable upon it. This was not exactly in the middle line, but occupied rather more of the left than of the right side. It was rather tender. There was no distinct groove between it and the mass of the tumour. Its outlines were hard and perfectly distinct, while the outlines of the rest of the swelling were not defined so well. This proved to be the fœtus.

On the right side the swelling extended almost to the iliac crest, an inch above the spine, and this part felt like the tense border of a stretched broad ligament. Nothing similar could be felt on the left side. The mass between the umbilicus and pubes was smooth and felt cystic and boggy, but did not fluctuate. In the middle, dulness extended to within a finger's breadth of the umbilicus, but the dulness was nowhere absolute.

The cervix was high up, soft, long, and funnel-shaped.

16th.—The abdomen presented much the same appearances as on the last examination. The upper border of the swelling was nine inches above the pubes. The smaller mass had increased a little in all directions but the main part little or none. The abdomen was a little more prominent on the right than on the left side; this prominence was smooth and felt like a half distended bladder.* There was some tenderness on the right side below the umbilicus; dulness reached half way up to the navel.

* The prominence subsequently proved to be the placenta.

About six ounces of urine were withdrawn from the bladder, but the prominence on the right side remained unaffected by it, and the tumour reached to the umbilicus.

On the 19th, Dr. Hewitt examined the patient and noted, "at a spot just above and to the right of the umbilicus, on deep pressure, there was perceived once only a distinct impression, which seemed precisely identical with what would be produced by a fœtal movement. The areola and nipple seem almost certainly to indicate the presence of pregnancy."

In the evening an attack of pain came on in the smaller part of the tumour, and lasted about six hours. The patient vomited, and at the same time a discharge, paler than the normal menses, appeared in the vagina, and lasted several days.

A week later (March 26th) the prominence on the right side was somewhat more distinct. It was soft like a cyst, and felt like the bladder undistended. No other change was observed in the swelling below the umbilicus. The tumour extended to four and a half inches above the navel. Dulness reached to three fingers' breadth above the umbilicus. There was slight œdema of the integuments above the pubes. No uterine bruit, nor fœtal sounds could be heard; no fœtal movements nor fluctuation could be felt. The breasts had a glistening appearance which they had not presented before. The cervix and body of the uterus were much softer.

On April 1st, the fœtal heart-sounds were heard at the umbilicus, 156 beats per minute.

11th.—Hitherto the uterus had been fixed, but on this date it appeared to be somewhat moveable. It bled on examination.

On May 11th, patient was attacked with pain in the bottom of the abdomen as if something was pressing on the bowel. She became cold and the temperature in the axilla was 96·6° and the pulse 140. About three-quarters of an hour afterwards the temperature in the rectum was

99° and the pulse 130; resp. 40 to 50 per minute. The skin felt warm and natural, no excessive perspiration, although the patient was much frightened. No change could be discovered on examination of the abdomen and vagina.

On the 27th, the tumour reaches to within one finger's breadth of the ensiform cartilage, and fourteen inches above the pubes. The prominence which began in the right side below the umbilicus extended five inches above the pubes, and measured about the same transversely. It fluctuated, and was evidently the placenta. No bruit was audible over it. The fœtus lay obliquely between the left hypochondrium and the right hypogastrium.

On June 3rd, the patient became restless; on the evening of the 4th she complained of backache, and vomiting set in and lasted for three hours, the vomited matters being a greenish, sour-smelling fluid. This was checked by a hypodermic injection of morphia.

6th.—The prominence supposed to be the placenta is considerably larger, and has the shape of a section of a spleen. It is soft, elastic, and fluctuating. There is no thrill in it. Its upper border in the median line reaches to the lower border of the umbilicus, and on the right side in the mammary line to the level of the upper border of the umbilicus. On the right side it reaches to the anterior superior iliac spine, and on the left beyond the middle line. No uterine bruit is heard over it, but occasionally a slight movement of gas is audible. The fœtal heart-sounds are heard most distinctly two and a half inches above the umbilicus in the middle line, 108 per minute.

It was decided to operate without delay.

The patient having been placed under ether, an incision about five inches long was made in the middle line, extending down to the umbilicus. The abdominal walls having been cut through, the cyst was seen covered by the omentum. The omentum was partly detached from

the cyst, and the latter was then opened. The hand was introduced, a foot seized, and the child extracted. The child lay almost entirely above the level of the umbilicus, with the head and feet (the legs being extended) in the left hypochondrium, and the buttocks just below the umbilicus in the middle line.

On further examination, after the extraction of the child, the prominence already described as placenta proved to be that organ; the cord was attached to its left side, two or three inches below the level of the umbilicus.

The cyst was stitched to the edges of the wound, the cord was cut about one and a half inches from the abdominal incision, and was left hanging out of the wound and not ligatured; a drainage-tube was introduced, and the wound closed. The operation was done antiseptically. During the week following the operation the wound was dressed once, sometimes twice, daily in consequence of the discharge soaking through the dressing.

Vomiting and flatulence gave rise to considerable trouble, the vomited matter being at first green, then dark brown. The vomiting was checked by the administration of hypodermic injections of morphia. About twenty-four hours after the operation the urine evidently contained carbolic acid; for this Sodæ Sulph. gr. x was given every two hours. The carboluria, however, did not pass away until the blue dressing and iodoform had been substituted for the carbolic.* During this time the pulse varied from 100 to 140, and the temperature from 99 to 101·6° F.

On the 13th, the wound was quite healed except where the tube was inserted and the stitches were then removed. Some time afterwards the patient vomited, and the upper part of the incision gave way for about one inch, so that a part of the stomach or intestine could be seen in the wound. It was sprinkled with iodoform, and the edges brought together by means of straps of plaster and the whole covered with iodoform wool. The remains of the cord came away this day. Temp. went up to 103°.

* On the 12th, when the discharge had become offensive.

From this time onwards the wound was dressed twice or three times a day until July 20th; the cavity was syringed out with a solution of perchloride of mercury at each dressing. The patient took food fairly well. Her temperature between the 14th and 18th varied between 101·6° and 104·4°, and her pulse between 106 and 136. Then the temperature fell, and rarely rose to 102°, and the pulse to 116.

On the 16th June, ten days after the operation, a portion of what appeared to be placenta came away, and afterwards shreds or small pieces escaped daily.

From this time to about the middle of July the patient complained of a good deal of pain, which had to be relieved by hypodermic injections of morphia.

On the 20th, fourteen days after the operation, the placenta for the first time felt solid to the touch and not fluctuating.

On the 24th, the finger was introduced into the wound, and it was found that the placenta was becoming detached. The swelling formed by the placenta was shrinking and was not so firm as it was two or three days previously.

On the 26th, several pieces of placenta escaped out of the wound, and after this date pieces were daily removed with forceps.

A counter-opening was made in the middle line three inches below the umbilicus on July 3rd; the finger was introduced and the placenta separated from the abdominal wall around, and large pieces of it removed by forceps. Some of these pieces contained blood, which was not coagulated, though somewhat viscid and dark coloured. After this portions of the placenta passed daily until the 14th, when it had all escaped. The patient improved rapidly, grew fat, and was discharged on August 14th.

At the time of her discharge the uterus was in the centre of the pelvis, somewhat moveable, but less so than in the normal condition of the pelvis; it did not appear to be heavier than natural.

The wound was not quite healed, but was completely healed a few days later.

There are several points of interest in this case. The patient had been pregnant before, and had suffered from inflammation after her labour. She became pregnant about the middle of October, 1884; for six months before that she had suffered from almost continuous uterine hæmorrhage. At the time she became feverish, and the fever was attributed to malarial poison. The bleeding ceased for three and a half months, then returned with expulsion of decidua and acute peritonitis.

The more interesting part—because I believe it has not been observed before—is the history of the growth of the placenta. This is scanty, but it offers points of great interest. It was first noticed as a small prominence in the right side of the abdomen below the umbilicus about the fifth month. It was soft and boggy; it gradually increased in size, became prominent and distinctly fluctuating, but over it was no bruit or thrill audible. Further, for two weeks after the operation it maintained its fluctuating character, and then became apparently solid to the finger. A month, or rather twenty-seven days afterwards, portions of it contained blood, which was still fluid, or at least viscid and not clotted. I once saw a swelling which appeared to be a small ovarian cyst aspirated; it proved afterwards to be the placenta in a case of extra-uterine gestation.

In the next place the child was deformed, and the deformity was due, in part at least, to pressure upon it.

Finally the patient recovered.

FŒTUS, SAC, AND PELVIC VISCERA FROM A CASE OF EXTRA-UTERINE PREGNANCY.

By Alban Doran.

Mrs. E. C—, aged 34, manageress of a laundry, married five years, no children nor miscarriages, menstruated regularly till April, 1885. Three weeks after the date when the period was missed, she felt a sudden hypogastric pain, and "water like blood" escaped from the vagina. Micturition became very painful.

Early in June, 1885, she consulted Dr. W. S. A. Griffith in the out-patient department at the Samaritan Free Hospital. The physical signs were noted thus: "Cervix displaced forwards, soft and violet behind; very tender swelling occupies Douglas's pouch." A fortnight later, the following note was made: "Uterus anteverted, enlarged, much tender elastic swelling behind . . . . Diagnosis: perioöphoritis, gravida, or extra-uterine fœtation."

The patient became very ill and placed herself under the care of Mr. Carr Holstok Roberts, of Kensal Road. Her husband was syphilitic and had perforation of the bony palate. Early in the autumn of 1885 she became infected, and a secondary roseolous rash appeared. Her abdomen steadily increased in size, and she suffered constant pain, to relieve which she administered to herself large subcutaneous injections of morphia. Early in December I visited her, at the request of Mr. Roberts. I found the abdomen distended to three inches above the umbilicus, by a soft, uniform swelling, elastic and not fluctuating. Pressure caused great pain. On digital

exploration of the pelvis, I found that the tumour filled the brim and projected considerably into the pelvic cavity. In its most dependent part, a hard structure like a fœtal head could be felt. The uterus was drawn upwards and forwards and the os uteri lay behind the body of the right pubis. No fœtal heart-sounds could be detected.

On January 13th, 1886, Mr. Roberts wrote to me saying that her expected term of 280 days, supposing that the amenorrhœa represented pregnancy, had expired on January 12th, milk had flowed from the nipples, and a slight amount of uterine hæmorrhage had existed for three days. The patient complained of a crackling sensation all over the front of the abdomen. She felt better in general health, but still required frequent injections of morphia. I found the cervix quite an inch lower down than before, in other respects the physical symptoms were unchanged.

The patient strongly objected for some time to entering a hospital. In the course of a month, however, her health rapidly deteriorated, and owing to careless nursing a large bedsore formed over the sacrum; she also suffered from failing business and domestic annoyances of a kind which would have harassed even a person in robust health. Early in February she was admitted into the Samaritan Hospital. The urine was then slightly albuminous and of low specific gravity.

After consultation with Sir Spencer Wells, Dr. Bantock, Dr. Griffith, and other colleagues, an exploratory operation was decided upon. I could not, however, think it justifiable to operate until the bedsore was at least partially healed.

For over a month I kept the patient at rest, dressing the bedsore, and administering ammonia and bark. Her general condition improved for a fortnight and then became worse, no period appeared, the temperature hardly ever sank to 98·4°, and generally kept at about 100°. The diameter at the umbilicus distinctly diminished nearly an inch (37 inches to 36). The urine occasionally

showed a trace of albumen, the specific gravity seldom rose above 1014.

At the end of March she grew very ill, being emaciated and losing all appetite. The temperature ranged between March 25th and April 8th from 100° to 102°. The bed-sore had now the appearance of an indolent ulcer without any slough on its surface; it began to show signs, however, of becoming sloughy again.

I felt that the case was very grave and held a consultation with a view to immediate operation. The opinions of my colleagues were divided as to the nature of the case and the proper treatment. The hard structure, like a fœtal head, in the pelvis, combined with the history, induced me to believe that extra-uterine gestation probably existed, still I felt doubtful about the diagnosis. I had once examined a case where a similar structure could be felt in Douglas's pouch, and it proved to be a fœtal head;* but I have repeatedly observed that a tense secondary cyst projecting from an ovarian tumour may simulate the cranium of a child as far as touch can detect. Sir Spencer Wells warned me that the amenorrhœa might be a pure coincidence or a result, not rare, of cachexia from a malignant tumour.

Ultimately I decided to operate. On April 9th, 1886, assisted by Dr. Bantock, and in the presence of a large number of colleagues and visitors, I made the usual abdominal incision. The peritoneum was much thickened and hard to recognise. On dividing it a dark brown, elastic, semi-solid tumour was exposed. It was not adherent to the anterior parietes around the incision. On plunging into it a Wells' trocar no fluid escaped and the tumour appeared to be solid. Though the point of the trocar was thrust well into the growth it did not strike against anything like a fœtus, nor could I feel any part of the fœtus on introducing my finger into the trocar wound. The tumour then appeared to me to resemble certain large ovarian sarcomata which I had seen operated upon, and

* Mus. Royal College of Surgeons, Path. Series, No. 4697.

Dr. Bantock considered that its character was still uncertain. I dreaded any attempt to examine the nature of the tumour by making a deep incision, as when this is done in the case of a malignant growth uncontrollable hæmorrhage may follow.

I therefore, with the advice of Dr. Bantock, thought it best to endeavour to remove the tumour entirely. Unfortunately there were strong adhesions at its upper limits, and in separating the transverse colon, which was very hard to recognise, its coat was lacerated. In raising the upper part of the tumour it burst on its right side, rather posteriorly, and a large fœtus protruded.* This I removed and then detached the tumour, or, more correctly speaking, the fœtal sac, almost to its base. Here adhesions to pelvic structures were very intimate. The rectum was lacerated in two places, the lacerations were immediately sewn up; neither the fundus nor any other part of the uterus nor its appendages could be detected. The wire of a Koeberlé's serre-nœud was passed round the root of the fœtal sac after the voluminous placenta had been peeled off. Another cavity, of uncertain nature, had been laid open above the base of the sac; its edges were fastened to the margins of the wound immediately above the clamped portion. A drainage-tube was now passed into this cavity. The wound in the transverse colon was then sewn up. As the intestines were practically empty no extravasation occurred from any of the lacerations. The abdominal cavity was thoroughly washed out with hot water weakly carbolised. The abdominal incision had been extended above the umbilicus, it was sewn up and the patient was put to bed. The operation lasted two hours and five minutes. The patient was much exhausted, but there had been little loss of blood. The spray and full antiseptic precautions were employed.

The patient was placed in bed at 11.35 a.m. She

* A similar incident occurred in a case where diagnosis had been doubtful in Mr. Thornton's practice. See "Case of Extra-uterine Fœtation," &c., 'Trans. Obstet. Soc.,' vol. xxiv, p. 81.

never thoroughly rallied, but complained of pain and vesical irritation, as is often the case when the serre nœud is employed for the stump of a uterus after the removal of a fibroid tumour. Beef-tea and opium injections were given freely, and I washed out the tube frequently; the serum smelt sour from the first. At 7 p.m. the patient had an attack of syncope; she rallied, but soon showed signs of extreme prostration. After midnight she became slightly delirious, and died at 3.15, on the morning of April 10th.

The *fœtus* weighed five pounds nine ounces, and measured eighteen inches from the vertex to the outer ankle. It was a male; its integuments were undergoing maceration. The finger-nails nearly reached the tips of the fingers; the ductus arteriosus was patent throughout.

The *umbilical cord*, about eight inches long, passed straight into the middle of the *placenta*, which formed a plano-convex mass weighing two pounds seven ounces, and measuring about four inches in diameter. It had been pierced and lay anteriorly, its lower portion, which was attached to the back of the uterus was removed separately. The placenta was an inch and a half thick in the centre, and was spongy, brittle, and relatively dry.

The *sac* was thin-walled, anteriorly free, but posteriorly superiorly and inferiorly adherent to every contiguous structure. No trace of the left tube or ovary could be found in its walls. I suspect that the fœtus developed in the left tube, which ruptured very early in pregnancy, when the sudden attack of hypogastric pain was felt. It would have been interesting to trace the peritoneal relations of the sac,* but the circumstances of the case rendered an accurate dissection impossible.

The post-mortem examination was made, and reported as follows by Dr. W. S. A. Griffith:

Body emaciated, abdomen somewhat distended, the wound tolerably firmly united, except round the pedicle

* See Drs. Hart and Carter's "Sectional Anatomy of Advanced Extra-uterine Gestation," 'Edin. Med. Journ.,' October, 1887.

and drainage-tube. Thoracic viscera quite healthy; no fluid in pleural or pericardial cavities.

Abdomen.—Stomach greatly distended, chiefly with gas, but contained half to three quarters of a pint of fluid; intestines generally empty, but considerable masses of scybala in two places.

The *peritoneal cavity*, as well as the sac, contained a considerable amount of dark bloody, purulent fluid.

Spleen and *liver* healthy.

Both *kidneys* with dilated pelves, especially the right. Right ureter also dilated, a considerable amount of urine escaped.

The *pelvic part of the fœtal sac*, which was very thick-walled, was found to have occupied the pelvic cavity behind the uterus, which, in fact, formed part of its anterior wall, and the placenta was partially attached to the posterior wall of the uterus.*

The sac shut off the pouch of Douglas, which was distended with yellow serum.

The left appendages were not found, the right ovary, tube, and round ligament were intact, the fimbriated end of the tube being firmly adherent to the right side of the cyst, about four inches above its lower end.

The uterus was found with the cervix drawn up and much elongated, measuring three inches in length. Half the body (right half) remained. The other half had been removed at the operation. Bladder, vagina, and rectum intact.

To the posterior surface of the remaining portions of the fœtal sac the bowels were very firmly adherent in several places. At one point the walls of the rectum were incorporated with the sac. The mesentery (*sic*) was considerably lacerated in these places. There had been no hæmorrhage of importance since the operation.

The distinctive features in this case have already been

* The "cavity of uncertain nature" into which I passed the drainage-tube appears to have been only a part of the fœtal sac.

noted. Extra-uterine pregnancy was suspected, yet diagnosis remained doubtful, not only until the abdominal cavity was laid open, but also until the cyst ruptured and the fœtus was exposed. The surface of the fœtal sac closely resembled that of a malignant ovarian growth, and the result of tapping with the ovariotomy trocar fortified that impression, as no trace of any fœtus was thereby detected. I must admit that in future the absence of any marked hæmorrhage from a growth after tapping, under similar circumstances, would induce me at once to believe that the growth must be a fœtal sac with degenerate walls. When a malignant ovarian growth is thus exposed after incision or tapping its entire removal is often advisable as the only means of checking hæmorrhage. On that principle removal of the cyst was attempted in this case. During the process of removal the cyst ruptured and the fœtus appeared. Diagnosis was then evident, but the rent in the cyst was too wide and too far back to allow of the regular method of treatment. So, instead of securing the cyst to the abdominal walls, I endeavoured to remove as much of it as possible, clamping the base. Unfortunately the adhesions were very intimate, and much damage was done to viscera in attempting their separation.

Last autumn I witnessed an exploratory operation, performed by a distinguished surgeon, and in that case also an apparently solid mass was exposed; the trocar was thrust in, and no fluid escaped, but dark red friable tissue was wounded. In that case also the tumour was separated from intimate adhesions, and ruptured during the process of separation, exposing a fœtus. Fortunately the adhesions were not very intimate, nor was the fœtal cyst closely connected with the uterus. The cyst was removed and the patient recovered.

In future, should I find myself operating on a case of this kind, I mean on a case where extra-uterine pregnancy is suspected but where the surface of the tumour gives the impression that it might be a malignant growth, I

shall make an incision with the thermo-cautery, as has recently been suggested to me, or at least I shall employ that apparatus should there be much hæmorrhage from the tapping puncture.

There certainly appears to be no rule by which the surface of a large extra-uterine cyst can be recognised without further exploration. It is usually dark, sometimes almost black, but in one instance, where Dr. Savage, of Birmingham, successfully operated at the fifth month, removing a dead fœtus, "the wall of the cyst was almost pearly white." ('Brit. Med. Journ.,' vol. i, 1886, p. 154.)

In any case there can be no doubt that that the enucleation of an extra-uterine fœtal sac after term is highly dangerous.

Dr. W. Griffith exhibited a series of specimens from the museum of St. Bartholomew's Hospital, also a six-months' fœtus removed by Dr. Godson, by vaginal incision, about ten days after the death of the fœtus.

CASE OF EXTRA-UTERINE FŒTATION.

By Clement Godson, M.D.

Emma M—, aged 37, married at sixteen years of age, three children, last seven years ago. No miscarriages. Was admitted to Martha Ward, St. Bartholomew's Hospital, July 28th, 1884, under the care of Dr. Matthews Duncan.

Catamenia commenced at ten and a half years of age. Regular since last confinement till seventeen weeks ago, since which time they have not occurred. Was quite well until fourteen weeks ago, when, while at work in the house, she was suddenly seized with violent pain in the lower abdomen, faintness and vomiting. She went to bed and sent for a doctor, who gave her medicine, which eased the pain, and in a few hours the faint feeling passed off. She kept her bed for three weeks, when she got up, but the pain and faintness returned, and she had to go to bed again. Three weeks ago she had a similar attack, the abdominal pain has been very severe ever since, till two days ago. She is now easier. During the whole time she has had a discharge, which she describes as "yellow corruption." The patient lies on her back, looks ill, but not anæmic; the cheeks flushed, tongue slightly furred; pulse 78, soft, temp. 100°; urine 1020, acid, no albumen.

July 20th.—Dr. Matthews Duncan dictated the following:

Per abdomen.—The lower half is occupied by a tumour having a well-defined upper margin on a level with the umbilicus. It is slightly tender on the left side, is dull on percussion and elastic.

Per vaginam.—A rounded, slightly tender, elastic hardness occupies the brim of the pelvis, evidently having solidarity with the hypogastric tumour. The cervix uteri is pressed forward against the upper part of the symphysis pubis. Probe enters uterus natural direction, 2¾ in.

Measurements of abdomen.—Girth at umbilicus 33¾ in., midway between umbilicus and pubes 36 in., right iliac spine to umbilicus 6½ in., left 7½ in., symphysis pubis to umbilicus 7½ in.

August 5th.—Complains of occasional pain and a feeling of movement in the abdominal tumour. On palpation, the hand, after resting some time on the hypogastrium, feels a sudden jerk, which the patient says is perceptible to her, and gives rise to pain. On auscultating the tumour no sounds can be heard.

11th.—Pulse 84, temp. 99°. Movements felt but nothing heard. Measurements show slight increase.

Girth at umbilicus . .	¾ inch more.
Girth half way to pubes .	½ inch more.
Left oblique . . .	½ inch more.

18th.—The patient now came under my care, Dr. Matthews Duncan having left town for his holiday. On this day I heard the fœtal heart distinctly in the left iliac region.

September 17th.—A uterine decidua was expelled. On palpation no movements can be felt; the patient has ceased also to recognise them. Fœtal heart inaudible.

18th.—Complains of dragging and bearing-down pains, thinks something else wants to come away. Pulse 90; temperature 99·2°. Measurements showed abdominal tumour somewhat diminished in size.

20th.—Has been sick several times during the night and slept very little; yesterday two small pieces of decidua came away. Pulse 72; temperature 99·2°.

I found *per vaginam* the cervix uteri closely adjacent to the pubes; os patulous, readily admitting finger as far as internal os; behind it, occupying nearly the whole of the pelvic excavation is a soft rounded mass, which in one

part allows the finger to indent it. It conveys the impression that it might burst at this point. Pressure on the abdominal tumour lowers the pelvic mass.

22nd.—Feverish. Temp. 100·8°.

24th.—Small clot and piece of membrane came away.

27th.—Evening temp. 103·4°.

29th.—The febrile condition continuing I decided to aspirate the tumour *per vaginam*, and so passed the needle through the soft place previously mentioned. It met with slight resistance at first and then seemed to enter a small cavity, giving me the impression of this being the fœtal head. About an ounce of blood was drawn off which did not clot.

The following morning the pulse was 98, temp. 101·2°.

October 2nd.—Restless and feverish. Complains of great pain and tenderness in the lower abdomen.

6th.—Has had several attacks of vomiting and feels very ill. Pain severe. Temp. 103·4°. At night about four ounces of very fœtid, chocolate-coloured fluid escaped suddenly from the vagina, giving immediate relief.

7th.—Another rush of fluid of the same character, about four ounces. The abdominal tumour has considerably diminished in size and is harder. The patient was placed under ether. *Per speculum* the dark fœtid fluid was seen to be flowing from a small opening where the puncture had been made. The uterine sound passed through this into a large cavity and came in contact with bone. I enlarged the opening with a bistoury, and then withdrawing the speculum I passed my finger through the opening and at once felt the head of the fœtus; a quantity of foul-smelling fluid escaped by the side of my finger. I perforated the head and emptied it, and then seizing it with the polypus forceps gradually drew it out, enlarging the aperture somewhat with my finger. I then perforated the chest and had no further difficulty in extracting the fœtus, a male about the fifth month; it was detached by cutting through the cord. The cavity was then well washed out with carbolic water, 1 in 40.

The placenta was attached to the back part of the uterus; I decided to leave it. During the next two days the cavity was frequently washed out with a weak solution of Condy, and on the following day, October 10th, a drainage-tube was put in.

13th.—A black mass was seen protruding through the wound and was drawn out with forceps, and found to be the placenta and membranes complete. The temperature, which was 103·2° the day after the operation, gradually fell. The syringing was continued then four times a day.

17th.—The patient expressed herself as feeling quite well. The following day the drainage-tube was removed.

On the 22nd I found the cervix in its natural position; the sound entered the uterus two and a half inches. The opening in the vaginal fundus was sufficiently large to just admit the finger. The abdominal tumour had entirely disappeared.

November 1st.—The opening was so small that the double catheter which was used for washing out the cavity was introduced with difficulty; as the discharge was very slight and inodorous, the syringing was discontinued.

8th.—She was allowed to get up, and on the 13th the opening was quite closed and she was reported well.

The fœtus was shown by Dr. Walter Griffith (p. 498).

Remarks.—You will note that the patient entered the hospital on July 28th, seventeen weeks after last menstruation.

On August 18th the fœtal heart was heard, twenty weeks after last menstruation. Movements were felt for a short time after this only, so that it would be about the fifth month that the fœtus ceased to live. If after this the patient had lost her attacks of pain, and had been in a fair state of health, she would have left the hospital, as others have done, with the knowledge that she had a dead fœtus encysted in her abdomen, and no operation would have been undertaken. It was done simply because the patient became seriously ill, with vomiting and considerable fever. The reason that I selected the vagina in

preference to the abdomen through which to extract the fœtus, was that it seemed to be already trying to make its exit in that direction, and therefore it could be very readily got at through that channel. The satisfactory termination of the case appears to justify that choice.

Mr. KNOWSLEY THORNTON was happy to be able to agree in the main with the propositions formulated by Dr. Herman. With 1 and 2 he entirely agreed. He thought, however, that 3 was hardly precise enough, as there might be great differences of opinion as to what was the proper treatment of hæmatocele under such conditions, he would be strongly in favour of abdominal section. He did not know the exact grounds Dr. Herman had for believing in the absorption of the fœtus, but he knew from clinical observation that the blood effused from time to time in these cases was not at all readily absorbed, the progress of such absorption being very different to that with which we are familiar in large, fresh outpourings of blood (hæmatoceles). Turning to the question of operation through the vaginal wall, he doubted whether in most cases the various points in exact diagnosis could so easily be made out as Dr. Herman's propositions would lead one to suppose, and he did not think the risk of wounding a coil of intestine was a small one, though it found no place in Dr. Herman's consideration. He thought with the present means of controlling hæmorrhage, the possibility of the placenta being situated on the abdominal wall need not be such an alarming complication of abdominal section as to influence the choice of operation. Passing to Dr. Champneys' paper he would say that the whole question of primary laparotomy hinged on perfect diagnosis; knowing how often there was something wrong with the child in these cases, he would disregard it altogether and simply consider the mother, and in every case he would urge that operation should follow at once on certain diagnosis. The whole question was the extreme difficulty in many cases of making such a certain diagnosis. He could not understand Dr. Champneys' treatment of the placenta; if it was left at all there ought to be absolute certainty of asepsis (very difficult to attain in these cases), or an opening kept till the placenta was discharged or removed. In Dr. Braithwaite's case the situation on the uterus probably greatly assisted absorption, but in Dr. Champneys' he knew that it was attached to intestines, the very situation of all others in which it was likely to become septic, or to be a source of danger if it organised. He could not agree with Dr. Champneys' argument that the operation was not the cause of death, or that the patient was in the same

condition as a woman whose fœtus had died before the abdomen had been opened.

Dr. Graily Hewitt related particulars of a case of extra-uterine pregnancy under his care at University College Hospital about thirteen years ago. The diagnosis was at first difficult, the tumour simulating growth of an ovarian tumour. Later on he had the advantage of a consultation with Dr. Braxton Hicks, who confirmed the diagnosis of extra-uterine pregnancy. It was determined to wait the result of arrival at full term. At about that time the patient became so ill that her life was threatened. The fœtus was dead. Laparotomy was then performed. The patient died the third day. In his opinion the complete diagnosis of these cases was very difficult. As regards treatment primary laparatomy had not been considered by the profession the best treatment. The case so treated related by the President was undoubtedly a success, but we could not count on this result in all cases. The treatment by electrolysis successfully carried out in several cases in America seemed more promising than other methods, but cases are not all alike, and this necessitates a varying treatment.

The President said that hitherto the difficulties in the treatment by laparotomy of extra-uterine pregnancy while the fœtus was alive had been the risk of septicæmia and of hæmorrhage. The danger from septicæmia had been greatly diminished by the employment of antiseptics, while the danger from hæmorrhage, in so far as was known, remained the same. Hæmorrhage was of two kinds, one occurring during the operation from making the incision into the placenta, and the other from separation of the placenta at some period after the operation. In the two cases of primary laparotomy read that evening, the placenta had been avoided. In one the site of the placenta had been diagnosed, in the other it had been suspected. Further observations may enable us to diagnose the presence or absence of the placenta on the anterior wall of the belly in cases of extra-uterine pregnancy and thus to avoid it in performing the operation. The danger from the second form of hæmorrhage increased in the same degree after the death of the fœtus, and we know of no safe way of dealing with it. The prevention of septicæmia had contributed, and the power of diagnosing the placental site will contribute greatly towards a more successful treatment of cases of extra-uterine pregnancy.

Mr. Lawson Tait said that by the casual remarks of Mr. Knowsley Thornton and Dr. Graily Hewitt there were left three points upon which something might be said. The first was as to the fear of meddling with the placenta, and he entirely agreed with the remarks of Mr. Knowsley Thornton, but certainly differed completely from those which had just fallen from the lips of the President, that with our modern appliances for

arresting the hæmorrhage we had no need to fear. Only about ten days before Mr. Tait had been called suddenly to Nottingham, to operate upon a case in which the placenta had to a large extent left the ruptured Fallopian tube and had obtained attachment to the posterior wall of the uterus, and some coils of intestine. When it was disturbed pretty active hæmorrhage of an arterial kind took place, but the removal of the placenta was proceeded with as far as was necessary, and the bleeding points being smeared over with a piece of solid perchloride of iron, no more was heard of the hæmorrhage. The patient has recovered satisfactorily. Another point in which Mr. Tait was greatly interested was that indicated by Mr. Knowsley Thornton when he gave evidence to the effect that the placenta grew after the death of the fœtus. When evidence on this point was first brought forward it was one of the observations to which he (Mr. Tait) had listened with great hesitation, and he had several times written to this effect, for he could not believe it. But there could be no question now that it was so, that after the fœtus died the placenta went on growing in at least a fairly large number of these cases. If this were so, what came of the proposal to destroy the fœtus by electricity, for if the life of the fœtus were destroyed, and the placenta continued to grow, what advantage could we gain? It was not the fœtus that was any source of danger, but the placenta in every instance. The third point was the difficulty of diagnosis, and his experience there was precisely that of Mr. Knowsley Thornton, but in accordance with the doctrine which he had been preaching for many years, he never allowed any uncertainty of diagnosis to stand in the way of an effort at saving the patient, and therefore in doubtful cases he opened the abdomen without hesitation.

Dr. HERMAN said that it was impossible to adduce evidence that absorption of the fœtus and effused blood after rupture of extra-uterine gestation frequently took place because such cases recovered. But he thought there was reason for an opinion that had been often expressed, viz. that many cases of pelvic hæmatocele that ended in recovery were probably due to unsuspected extra-uterine gestation. Leopold had made some experiments on animals that gave support to this opinion. He opened the uterus in animals a little way advanced in pregnancy, and turned the embryos into the peritoneal cavity. He found that they were absorbed.* He (Dr. Herman) was inclined to agree with Mr. Thornton, that if a hæmatocle required opening, it was better to open it by the abdomen than by the vagina, unless there were some special reason for adopting the latter course. He did not think there was any difficulty in recognising the fœtal head when it occupied Douglas's pouch, and placenta did not intervene. Cases quoted in his paper, and others related in the discussion,

* 'Arch. für Gyn.,' Band xviii.

showed that the sutures might be made out. If this could be done, there need be no fear of wounding intestine by the necessary incision. Since his paper had been written, an important case had been described by Drs. Hart and Carter,* in which they had made frozen sections of a case of extra-uterine gestation a little beyond term, and these showed that the fœtus, which occupied Douglas's pouch, the placenta being above it, was quite outside the peritoneum. In a case such as this, the advantages of the vaginal operation were evident. He thought that the observations made by Drs. Champneys and Williams as to the condition of the placenta in their cases, were of great importance. There were two kinds of placenta met with in extra-uterine gestation: one kind was thin and spread out, having very extensive attachments; and this kind would evidently be very difficult of complete removal, and much more difficult at term than at the fourth month, as in the case related by Mr. Tait. There were other cases in which the placenta formed a thick, solid lump, thicker than a normal placenta, and closer in texture, looking not unlike a piece of hepatized lung. In this kind the vascular connection between the placenta and the maternal structures was much less extensive, and the placenta could be removed without great difficulty. He had exhibited to the Society at its meeting on June 2nd, 1886, an extra-uterine fœtus and placenta, which he had successfully removed; in that case the placenta was of this kind, and its removal was easy. The placenta now shown of Dr. Champneys' case presented the same characters, and he gathered from the paper that it was so loose that it might have been easily removed. Mr. Knowsley Thornton ('Trans.,' vol. xxiv, p. 81) had exhibited to the Society a fœtus and placenta which he had removed with success, and the condition of this placenta was similar. So was the one exhibited this evening by Mr. Doran, and there was another in the museum of the Royal College of Surgeons, which was like those already mentioned. Judging from the cases at present known to him, he thought this transformation of the placenta into a fleshy mass easy of removal took place after the death of the fœtus. It would help greatly in treatment if we knew upon what these differences in the placenta depended, and could diagnose the condition of the placenta before operation. Had it been possible to do this in Dr. Champneys' case, the patient might have been saved.

Dr. CHAMPNEYS (in reply to Mr. Thornton) said that he thought Mr. Thornton could not have followed the paper nor the abstract, which was in his hand. In the first place, Mr. Thornton doubted if the case was aseptic after operation. The paper and abstract plainly stated that, with the exception of four transient rises of temperature during the first six days, the temperature remained normal, and the patient apparently quite well

* 'Edinburgh Med. Journ.,' Oct., 1887.

for thirty-three days. In the second place, Mr. Thornton said that the author should not have allowed the wound to close. The author had done his best to prevent this. He left the cord hanging out, and put two large drainage-tubes in. But when (as stated in the paper) the cord became adherent to surrounding structures, and the drainage-tubes became absolutely blocked by organised lymph, which fell out of them, on removal, like strings of macaroni, he felt himself powerless to prevent it and thought he would take the hint. Mr. Thornton said that the author might have expected what happened. But Dr. Braithwaite's case, in which the placenta never came away, and cases in which the placenta has not only lived but grown after the death of the child, were much in his mind. He did not know why the placenta in his case should not behave in the same way if kept aseptic after operation, which, he had not the least doubt, it was. He hoped it might do so, and for thirty-three days he appeared to be right. He did not now see why it should not in another case, and he should act in another case as he had done in this, except that (as he had said in the paper) in a similar case, with similar symptoms, he should operate a second time and try to remove the placenta. But his case was unique in several respects (as he had pointed out), and showed itself early to be so, thus depriving him of the guidance of other similar cases. Mr. Thornton had also criticised the expression that the fatal result was not due to the operation. Dr. Champneys had taken great pains in his paper to define his meaning. With thirty-three days' quiescence the immediate effects of the abdominal section were surely at an end. The patient died from her placenta. Now, the placenta in this case was in exactly the same condition as it would have been if the child had simply died, and no operation had been done. Therefore, the operation (in this sense) could not be said to have killed her. She died from want of operating, perhaps, for a second operation for removal of the placenta might have saved her, though it might also have killed her. In this matter no previous case was any guide to the author. Dr. Champneys, so far from disclaiming responsibility for the conduct of the case, accepted it to the full, and, in the main, would act the same another time. It was quite open to Mr. Thornton to think (if he chose) that the woman was killed by the operator, but he did not think he could maintain that she was killed by the operation. Dr. Champneys would really like to know what Mr. Thornton would have done, that it might guide him for the future. Finally, he wished again to emphasize the facts as regarded the placenta. The expression "placental" souffle is still occasionally heard, even in this Society. In both Dr. Williams's case and his, in which the placenta was freely accessible, it had no thrill, and was absolutely silent.

DECEMBER 7TH, 1887.

JOHN WILLIAMS, M.D., President, in the Chair.

Present—42 Fellows.

Books were presented by Sir H. W. Acland, Dr. Goodell, Dr. La Torre, Dr. Ménière, and the New York Academy of Medicine.

John Shaw, M.D., was admitted a Fellow of the Society.

Henry Frank Bailey, M.R.C.S. (Lee); Oswald Baker, L.R.C.P. & S.Ed. (Rangoon); Walter H. Haw, B.A., M.R.C.S. (Wednesbury); and R. Alexander Shannon, L.R.C.P.Ed. (St. Mary Cray), were declared admitted.

The following gentlemen were proposed for election:—Ernest Annacker, M.D.Berlin (Manchester); James Harry Ernest Brock, M.D., B.S.Lond.; James Alexander Fraser, L.R.C.P.Lond. (Romford); Arthur Wilton Galloway, L.R.C.P.Lond.; George John Morgan, L.K.Q.C.P. (West Felton); Alexander Morison, M.D.Ed.; Edward Herbert Myddelton-Gavey, M.R.C.S.Eng. (Ipswich); Franklin Hewitt Oliver, L.R.C.P.Lond.; Norman Rushworth, L.R.C.P.Lond. (Walton-on-Thames); Howard L. Smith, L.R.C.P.Lond.; Herbert R. Spencer, M.D., B.S.Lond.; and Henry George Sworn, L.K.Q.C.P.I., and L.M.

COLUMNAR EPITHELIOMA OF CERVIX UTERI. REMOVED BY ÉCRASEUR.

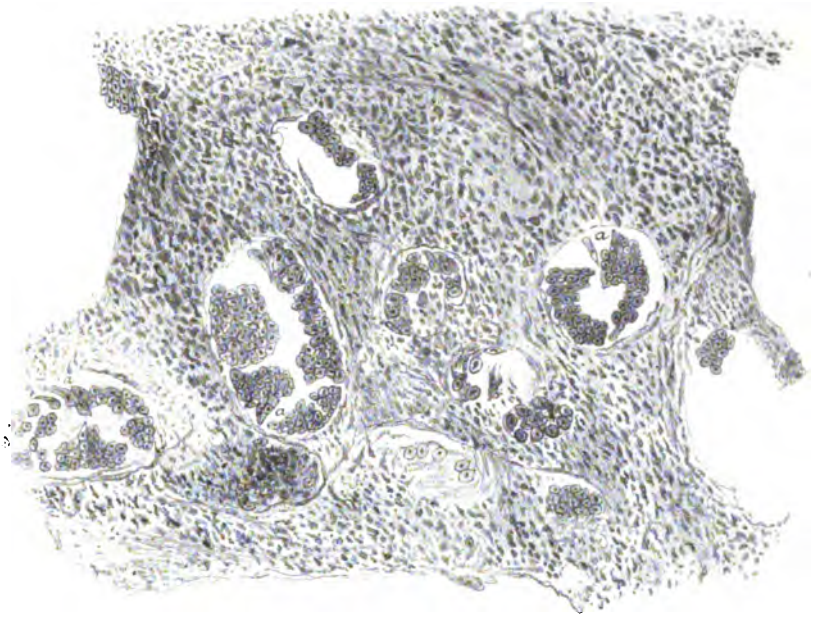
By Graily Hewitt, M.D.

Mrs. J—, aged 35, has had two children, aged thirteen and ten years respectively. For the last year she has lived near Caterham, prior to that in Leamington. Supposed to be tolerably well until four weeks ago, when she was suddenly attacked with hæmorrhage on getting out of bed. The quantity of blood lost was very great. It appears that she was aware of the presence of some unusual substance in the vagina, and it had been observed by her husband in intercourse as much as a year previously. Further, there had been a yellowish discharge during the last one and a half years. Occupation necessitates standing a great part of the day. Sent to me by Dr. Diver on October 7th. I found a growth, very hard and smooth, proceeding from the os uteri, the size of an egg, and advised operative treatment. Further examination later on rendered it probable that the growth was of a malignant character, but it was exceedingly hard and dense, and as no os uteri could be detected it was thought just possible it might be a fibroid polypus, with partial inversion of uterus.

An operation on October 21st, however, was performed, and the growth removed by the wire écraseur. At that time the hardness had diminished, and the growth was found to be the everted and enormously enlarged posterior lip of the os uteri.

The patient left for her home in a very satisfactory state fourteen days later. On examination after operation no induration was to be felt, and inspection of the specimen shows that the wire has cut through tissues apparently healthy.

This growth has been kindly examined for me by Dr.



x 175 diameters.

a.a.a. typical columnar cells.

R. Boxall del. West, Newman & Co. Lith.

Boxall. It is a columnar epithelioma of the cervix constituting a tumour the size of an egg, and, seeing that the whole of the disease has been removed, it is to be hoped that the return of the malady may be averted.

From a drawing by Dr. Boxall. The tumour removed (actual size). The larger part is the diseased posterior lip of the os uteri.

SPECIMEN OF "INSERTIO VELAMENTOSA."

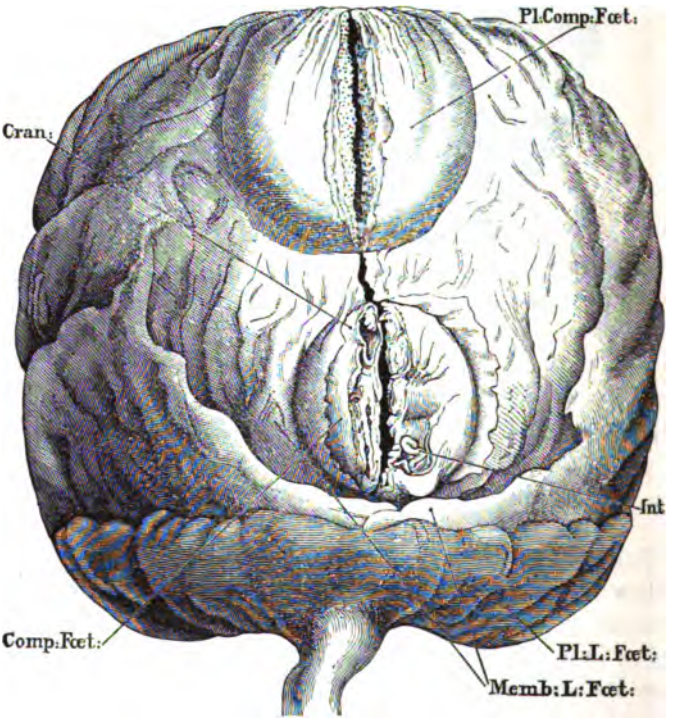
Exhibited by G. Mallack Bluett, M.D.

The cord is first attached to the membranes about four inches from the nearest edge of the placenta; running between the amnion and chorion for three and a half inches in a direction parallel to the circumference of the placenta and close to the rupture; it takes a sharp turn about five inches from the edge, the vessels then dividing and passing on to the placenta.

REPORT OF COMMITTEE ON SEVERAL SPECIMENS, APPOINTED JUNE, 1887.

Dr. Bluett's Tumours of the Membranes (*supra*, p. 243).

On careful dissection of the smaller tumour it appears to be a fœtus with flexed spine and limbs, flattened from



Drawn to scale, half size, after section through middle of each tumour had been removed for microscopical examination.

Pl. comp. fœtus = Placenta of compressed fœtus. Cran. = Cranium. Comp. fœtus = Compressed fœtus. Int. = Intestine. Pl. l. fœtus = Placenta of living fœtus. Memb. l. fœtus = Membranes of living fœtus.

side to side, the liquor amnii absorbed, the fœtus of apparently between three and four months' intra-uterine age. The larger tumour appears to be the placenta of this fœtus. The microscopic appearances are as described by Dr. Herman* (p. 243). The umbilical cord cannot be perceived by macroscopical examination, nor can any vascular connection between this tumour and the placenta of the living fœtus.

The tumours, therefore, are a very early fœtus papyraceus and its placenta. They are remarkable as being an instance of this change taking place at an unusually early period of pregnancy, and in there being practically no vascular connection between the placentæ of the healthy and of the atrophied twin.

Dr. John Williams's Specimen (*supra*, p. 247.)

One half of the tumour which we examined was firm and tough, bearing all the physical characters of a fibroma.

Microscopic appearances.—The sections showed great abundance of pure fibrous tissue arranged in characteristic wavy bands. No distinct cells could be defined. It must be remembered that the tumour had been immersed for a considerable period in very dilute alcohol, so that it is possible that some of the elements of the growth may have been destroyed by maceration; still there can be little doubt that the tumour is a pure, or almost pure, fibroma.

Mr. Meredith's Specimens (*supra*, p. 248).

I. Mr. Meredith has furnished us with the following note :—"Fibro-cystic tumour of the ovary. Specimen removed from a married woman forty-five years of age in July, 1886. Shows a vertical median section of the

* They are very similar to those figured in the 'Arch. für Gyn.,' Band xxix Taf. ix, figs. 7 and 8, which represent sections from a uterus pregnant five weeks.

growth, which was attached by a narrow pedicle to the left of a normal uterus. The cystic portion of the mass contained blood-stained serous fluid. The right ovary and tube were healthy. No ovary could be felt on the left side after removal of the tumour." The tumour felt tough and fibrous; it included a nodule about one inch in diameter, which was much harder than any other part. No Fallopian tube could be discovered.

Microscopic appearances.—The main part of the tumour was made up of elongated cells with very large nuclei like uterine muscular fibre. Bands of pure fibrous tissue were detected in parts of the sections, but they were not generally distributed. The hard nodule was made up to a great extent of pure fibrous tissue in wavy bands. There was also an abundance of cells with elongated nuclei, much smaller than those so generally distributed in the main and softer part of the tumour.

The tumour was therefore a fibro-myoma. The evidence of the operator tended to prove that it was ovarian, but allowing for the difficulty of determining anatomical relations in the course of a complicated abdominal section, and for the fact that the corresponding Fallopian tube could not be found, it might have been a subperitoneal growth from one side of the uterus.

II. Mr. Meredith sent in the following note:—"Fibroma of ovary (?) (*supra*, p. 249). Solid tumour completely encapsuled in the left broad ligament, whence it was enucleated and found to be connected by an extremely short but well-defined pedicle, with the left cornu of a small and perfectly normal uterus. The right ovary and tube were normal. No trace of anything like an ovary was to be found on the left side after removal of the tumour. The patient is single, aged 47, still menstruates regularly, but the flow is, and always has been, very scanty. The section of the cut surface gives an incorrect idea as to the breadth of the uterine connection, which was about half an inch in diameter."

Microscopic appearances.—The tumour was made up of

wavy bundles of fibrous tissue with abundant, elongated connective-tissue cells. In many parts there were collections of long flattened cells with large elongated nuclei, closely resembling uterine tissue.

The tumour was therefore a fibro-myoma. The evidence that it was ovarian and not uterine was strong but not conclusive, as the relations of the tube were not identified, and it was not certain that the broad uterine connection was the ovarian ligament, hypertrophied. The tumour might have been a subperitoneal fibro-myoma of the uterus, which had burrowed between the folds of the broad ligament.

Mr. Malcolm's Specimen (*supra*, p. 249).

The tumour formed a flattened sphere about four inches in diameter, tough and heavy. On section its cut surface appeared almost white and of fibrous consistence. There were traces of a pedicle in which no distinct anatomical elements could be found.

Microscopic appearances.—True fibrous tissue in wavy bundles was found in tolerable abundance, but the bundles included elongated connective-tissue cells, and in parts were replaced by long rows of cells of larger size with elongated nuclei thick in the middle. In those parts where the large cells replaced the fibrous tissue mixed with smaller cells, a homogeneous matrix could be seen; this appeared to be fibrous tissue breaking down.

Hence the tumour appeared to be a fibroma of the "youngest" type, including very new connective tissue. The large cells were not plain muscular fibre, as their elongated nuclei were too large, and above all too thick in the middle. Had they formed the whole of the tumour, which was far from being the case, the tumour would have been a spindle-celled sarcoma.

It must be admitted that some rows of cells of size intermediate between the large cells and those mixed up with the fibrous bundles were indistinguishable from plain

muscular fibre, but the general characters of the section favour the opinions of its nature which we have just expressed.

ALFRED L. GALABIN.
G. E. HERMAN.
ALBAN DORAN.

A CASE OF ECLAMPSIA OF PREGNANCY WITH OBSERVATIONS ON THE STATE OF THE RENAL FUNCTION.

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(Received April 18th, 1887.)

(*Abstract.*)

The author relates a case of eclampsia coming on about the end of the seventh month of pregnancy. The patient recovered from the eclampsia, and the pregnancy continued for a fortnight afterwards, when labour spontaneously came on and a living child was born. During the lying-in period the patient twice had an erythematous rash, but, except for this, convalescence was undisturbed. The temperature during the eclampsia did not exceed 100°. The urine was daily collected, and examined quantitatively throughout. During the seizures it was small in quantity, of high density, but with a low percentage of urea, and containing much albumen. As the eclamptic seizures and the stupor following them passed off, first the percentage of urea rose, and then the quantity of urine and of total urinary solids ascended to the normal, and the quantity of albumen diminished. But the albuminuria did not disappear until after delivery; it sank from one fifth before delivery to a trace on the third day after delivery, and disappeared on the sixteenth day. A slight increase in the albuminuria coincided with the erythema. The albumen was mainly paraglobulin. The author thought that the facts of the case tended to show that the disturbance in the renal function was due to altered pressure in the vessels rather than to changes in the renal cells. The eclamptic symptoms subsided when only slight improvement in the renal function

had taken place, which showed how large a margin of safety there was in the conditions under which the kidneys ordinarily worked.

In an appendix Dr. Herman communicated another case which showed a similar alteration in the renal function, viz. during the eclamptic period, a great decrease in the excretion of urea, not only absolute, but relative to the quantity of the urine and its specific gravity; the excretion of urea rapidly rising after the eclamptic symptoms had passed off.

ECLAMPSIA is not common in the practice of any one practitioner. Eclampsia of pregnancy ending in recovery (so far as the eclampsia is concerned) without interruption of pregnancy is very uncommon; and still less common is it for such cases to be admitted into institutions where their phenomena can be well observed. The case which I now report is exceptional not only as to its nature and course, but also in its having been observed with unusual care and thoroughness, and I have therefore thought it worthy of separate record and comment.

The notes of the case were taken by Mr. H. M. Doyle, clinical clerk.

J. S—, aged 19, was admitted into the London Hospital on July 25th, 1886.

Patient was a Polish Jewess, and as neither she nor her friends spoke English well it was difficult to get a good history of her illness. She had been living in London for about ten months. She said she had always been healthy, never having had any severe illness. She began to menstruate at seventeen and had been regular until her pregnancy, without pain. She was married twelve months ago and became pregnant four months afterwards. During her pregnancy she had good health, ate well and slept well throughout. For attendance in her confinement she obtained a letter from the London Hospital Maternity Charity.

She was strong and well built, well nourished, and not anæmic.

She was in her usual health when she went to bed on the night of July 23rd. The next morning she woke with a "splitting" headache, the pain being most severe on the vertex, and shooting down the sides of the head around the temples. She could not see clearly on account of "rainbows" before her eyes. She could eat nothing and was drowsy. About noon she felt sick and vomited. At 9 p.m. she was suddenly seized with a fit, which her friends said lasted about five minutes; she "worked" her arms and legs, foamed at the mouth, and was insensible. After the fit she recovered a little and asked for some milk, and while it was being procured she went off again in a similar fit. After this she had fits again almost every hour, and did not regain consciousness until 5 p.m. on the 25th. Her friends said she had more than twelve "long" fits before admission into the hospital. Mr. Coates, one of the Maternity pupils, was summoned from the hospital to her at 7.30 a.m. on the 25th. He found the patient unconscious and the subject of epileptiform convulsions, the conjunctivæ being insensitive. She was admitted into the hospital at about 2 p.m. While in the receiving room she had a fit, and between 2 and 5 p.m. she had two more fits. One of these fits was seen by the resident accoucheur, Mr. W. R. Tuckett; it was an epileptiform seizure with loss of consciousness. Between the fits the patient lay in a semi-conscious state, not completely insensible, but only to be roused with difficulty. The pupils were contracted; optic discs somewhat hyperæmic, otherwise normal. There was slight œdema of hands and legs. No cardiac murmur nor evidence of cardiac hypertrophy. No signs of lung disease. The uterus reached one third of the distance between the umbilicus and ensiform cartilage. Circumference at umbilicus thirty-one and a half inches. No appreciable dilatation of cervix uteri.

July 27th.—Patient has had no more fits but is stupid and somnolent.

30th.—Last two days diarrhœa. Patient's general

condition improved; is drowsy but otherwise feels well; takes food well. No appreciable dilatation of cervix.

August 3rd.—Continues to take liquid food well and asks for meat.

6th.—Complains of pain in back. Only slept half an hour last night.

7th.—Still complains of pain in back. Did not sleep last night. Glairy and somewhat bloody discharge from the vagina. Os uteri thin, and large enough to admit tip of finger. Presentation cranial.

8th.—Patient delivered at 1 a.m. by the natural efforts of a living male child, measuring fifteen inches in length. It died six and a half hours after birth. Nothing abnormal about placenta perceived.

9th.—There is a slight red papular rash on face, nowhere else.

10th.—Rash fading.

11th.—Rash disappeared. Milk secretion scanty.

17th.—Temperature rose last evening to 101°; this morning it is 100°. Inquiry and physical examination failed to detect anything to account for it.

18th.—Uterus not to be felt above pelvic brim.

19th.—A fine red papular rash has appeared on the forearms, thighs, and legs. It is attended with considerable itching, but no wheals.

20th.—Rash increased, papules more confluent.

24th.—Rash has entirely disappeared.

26th.—Rash has reappeared on thighs and forearms.

31st.—Rash gone. Patient discharged.

Temperature..—On admission (2 p.m. July 25th), the temperature was 99°. At 6 p.m. (the patient having had three fits between 2 and 5 p.m.) it reached 100°. At 8 p.m. it was normal. It was taken every hour from 5 p.m. on the 25th, till 10 a.m. on the 26th; but from 8 p.m. it did not rise above normal; and at 10 a.m., as the patient was very much better, the hourly record of temperature was discontinued. It was then taken as usual in the hospital, night and morning, and was each time found to

be normal until 7 p.m. on July 28th, when it was 101°. This coincided with an attack of diarrhœa, already mentioned. The hourly record was then resumed, and continued throughout July 29th, 30th, and 31st, August 1st, 2nd, 3rd, 4th, 5th, 6th, and 7th, on the evening of which day it was left off. The temperature gradually fell on the evening of the 28th, and reached normal at midnight. It did not again, on any of the ten days during which it was hourly measured, exceed normal. On the 8th, at 10 a.m. (nine hours after delivery), the hourly record was resumed, and continued till August 10th, at 11 a.m. On August 9th, at 4 a.m., and again at 4 p.m. it reached 100°, and these were the maxima recorded. After this date the temperature was not again taken as frequently as every hour. It remained normal till August 16th, when it reached 101·1°. The next day it was 100·1° in the morning, and 100·4° in the evening. On the morning of the 18th it was normal. This temporary and slight elevation of temperature preceded the appearance of the erythematous rash which has been mentioned. After this date, throughout the patient's further stay in hospital, the temperature did not exceed 99·2°.

The records of temperature obtained in this case are not as interesting as they would have been had the opportunity been given of taking them while the disease was at its height, or had the seizures recurred at the time of labour, the possibility of this recurrence being the inducement to make such frequent observations. But as it is not often that the temperature of the same person is taken hourly throughout several successive days, not to speak of the patient being a pregnant woman, I have thought that, as illustrating the diurnal variations of temperature, the observations are worth consideration. They comprise twelve days, throughout which the temperature was normal. Mr. W. R. Tuckett has at my request constructed from them an average, composite, or mean temperature chart, showing the diurnal variation. This has been made by adding together the figures indicating the temperature

for the same hour of each successive day, and dividing the total by the number of temperatures included. The result of each of these calculations is of course the average temperature for that hour. The chart shows a very regular variation, the lowest temperature, averaging 97·4° being from 10 p.m. to 6 a.m. Then the temperature begins to rise, reaching 98° at 10 a.m. The maximum,

CHART *showing hourly variation of temperature.*

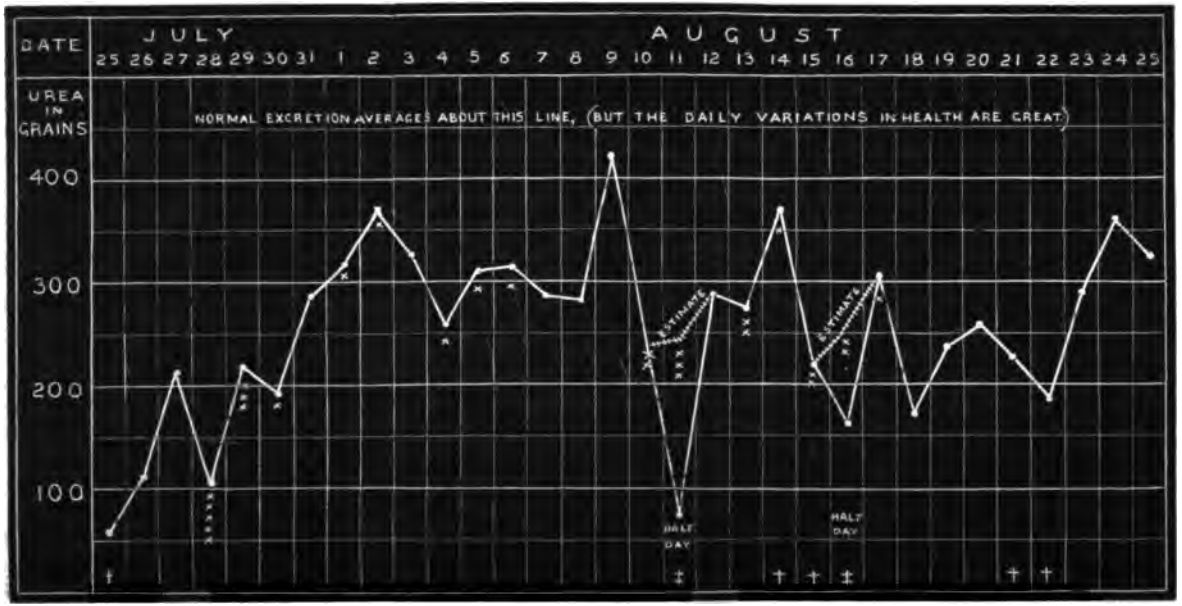
98·8°, is reached at 7 p.m., and then the temperature again sinks. This chart may be compared with one constructed in a similar way which I contributed to vol. lxvii of the 'Medico-Chirurgical Transactions,' showing the diurnal variations of temperature in the secondary fever of smallpox. This showed the hour of greatest pyrexia to be 6 p.m.

Urine.—As far as possible, all the urine passed by the patient was collected. The records of the daily quantity are prevented from being perfectly accurate by the source of error always present in an investigation of this kind in the case of a female, viz. that some urine is passed along with the motions, and cannot be separated from them. In the chart appended, the number of motions passed each day is noted, so that the amount of unavoidable error from this cause can be seen. Each sample of urine was examined as to specific gravity, albumen, and urea. The amount of albumen was estimated roughly by the eye

after coagulation and standing. The urea was measured by West's hypobromate process. The process was carried out under the supervision of Mr. W. R. Tuckett, resident accoucheur, by Mr. H. M. Doyle, clinical clerk, and I have no doubt that the results are as accurate as anyone not an expert analyst could make them. They were afterwards submitted to Dr. Hingston Fox, who has kindly corrected them for the barometric pressure and temperature of the different days on which the analyses were made; and from the quantities of urine and percentages of urea noted has worked out the total quantity of urea passed daily. The amount really passed is somewhat larger than that known, for, as has been said, some urine was unavoidably lost with the stools; and from occasional accidental causes a few specimens of urine were not examined. The data for estimating the amount of error from the former cause are given on the chart; and omissions of the latter kind are not numerous. Dr. Fox has made allowance for them, and shown the estimate, thus corrected, on the chart. All the facts ascertained are displayed on the chart. I now summarize them.

Quantity.—The patient was admitted about midday. The secretion was then very scanty, amounting during the latter half of the day of admission only to eight ounces. It gradually rose till the ninth day (August 2nd), when it reached eighty ounces. This rise was probably due not merely to better action of the kidneys, but also to the increasing amount of solid and liquid food taken by the patient. Had it been possible to get perfectly accurate observations, they would probably have shown that the action of the kidneys was earlier re-established than the chart as it is shows, for on the fourth and fifth days, on which the chart shows an amount of urine only slightly greater than on admission, the patient was suffering from diarrhœa, and the amount of urine lost with the stools was considerable. After the ninth day the secretion of urine continued to be abundant until the day following labour, when it dropped to thirty-

CHART *showing total urea excretion.*



× Stools. † *Slightly* defective returns corrected by estimate. ‡ Returns show one half the day only.

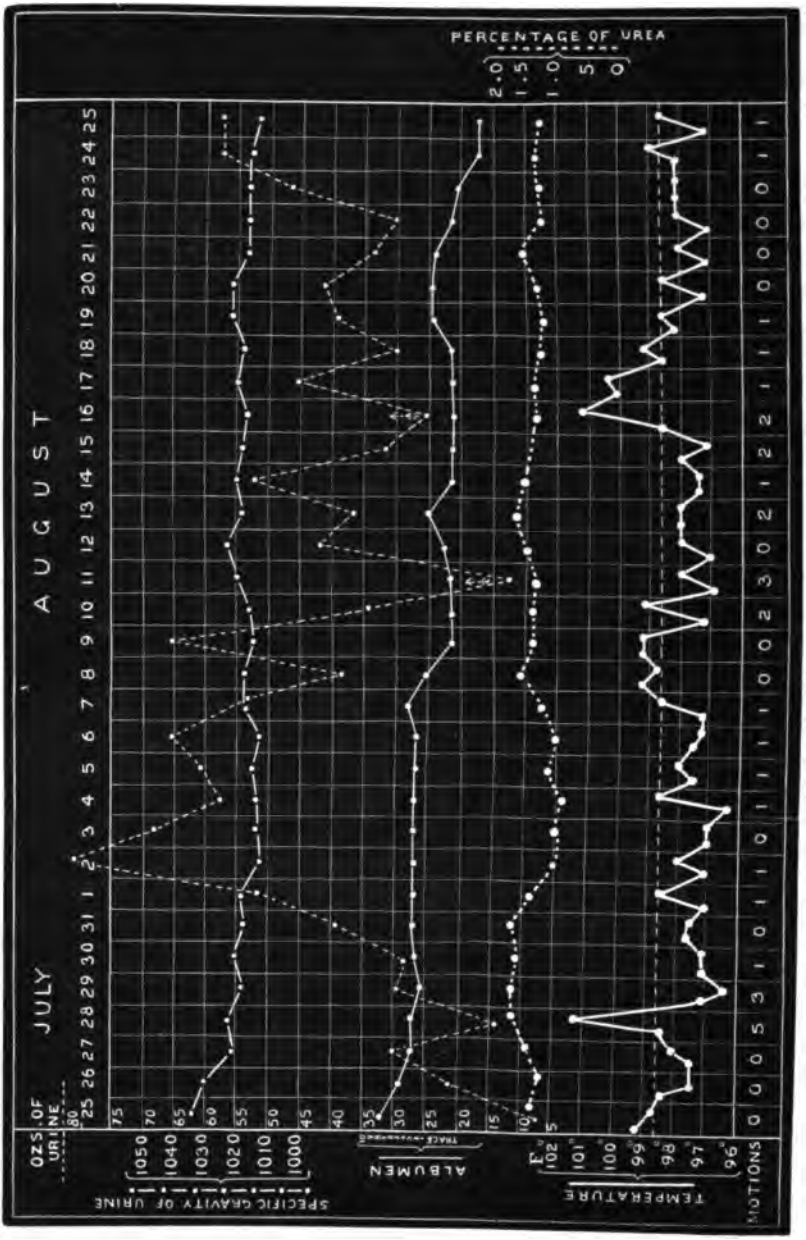


Chart showing temperature, quantity of urine, specific gravity, amount of albumen, and percentage of urea.

seven ounces, a diminution in contrast with the diuresis which usually immediately follows delivery, and which I can only account for by supposing it due to a very small amount of nutriment taken on that day, although I have no particulars of what the patient did take by which to verify this supposition. From that date occur irregular variations, which do not seem to be important, the days when the quantity collected was scanty being those in which the bowels were open more than once.

Specific gravity.—This was very high in the urine withdrawn soon after admission, viz. 1037. On the next day it fell to 1030, and on the third day to 1021. It then continued to fall gradually but with slight irregularity till the ninth day, when it was 1013. This was the day on which the quantity of urine secreted reached its maximum. The urine continued of about the same density until the days of labour and delivery, on which it rose to 1018. On the fourth day after delivery it was 1020, and it continued about the same afterwards, with slight variations, the specific gravity being as a rule higher when the quantity was less, lower when the quantity was greater.

Albumen.—The urine drawn off soon after the patient's admission contained four fifths of its bulk of albumen. After admission this amount gradually diminished. On the third day about three tenths of its bulk of albumen was precipitated. On the fifth day there was only about one tenth. After this the urine continued to present about one fifth of its bulk of albumen until the day after delivery, when the quantity fell to one tenth, and on the third day after delivery to a mere trace. This trace continued to be present until the sixteenth day after delivery, when the urine became quite free from albumen. On two occasions during this time the quantity rather exceeded a trace, viz. on the sixth day after delivery, on which occasion no definite cause could be found for the increase, and on the eleventh, twelfth, and thirteenth days after delivery, when the slight increase

in the amount of albumen coincided with the appearance of a red papular rash on the skin.

I may here say that this rash was simply erythematous. It was not scarlatinal, for it did not appear till the third day following the rise of temperature, instead of on the second, as in scarlatina, and the temperature fell to normal before the rash came out, instead of remaining stationary until the fading of the rash, as in scarlet fever. There was no sore-throat, and the increase in the albuminuria coincided with the rash instead of following it, as would have been expected had the rash been scarlatinal. I suppose the temporary increase of the albuminuria may have been due to a condition of the kidney somewhat analogous to that of the skin.

On three occasions, viz. on the fifth, fourteenth, and seventeenth days after admission, in accordance with the instructions of my colleague Dr. Ralfe, who was so good as to see the case at my request, the urine was tested by heating it with a saturated solution of magnesium sulphate, in order to precipitate the paraglobulin; filtering it, and then testing the filtrate for serum albumen by heat and nitric acid. On the fifth day the sero-albuminous precipitate then obtained was only slight, while that obtained by testing without previous separation of paraglobulin amounted to one fourth of the bulk of the urine. On the fourteenth day, the urine tested in the usual way gave a precipitate of one sixth albumen; but after the separation of paraglobulin, boiling gave only a slight milky appearance. On the seventeenth day, when the amount of albumen had sunk to a trace, the urine remained perfectly clear on boiling after separation of the paraglobulin.

Urea.—The excretion of urea was greatly below the normal at the time of admission. It gradually increased until the ninth day after admission. The days of labour and delivery were not accompanied with any marked alteration in the amount of urea excreted; but the day following delivery showed the largest excretion of urea of any day of the patient's stay in hospital. The days after

labour in which there was a temporary increase in the amount of albumen, do not show any marked alteration in the amount of urea excreted. Looking at the chart broadly, and allowing for the urine lost with the stools, the excretion of urea is seen to be least in the week of admission, that is, in the days following the fits; greatest in the week after labour; rather less than this in the second week after delivery, then again beginning to increase. Putting the facts in another way, the urea was greatly reduced by the processes of which the fits were an accompaniment, augmented by the processes immediately following labour; increased after a temporary diminution when the patient began to get about.

The *percentage of urea* after the first three days of the patient's stay in hospital followed pretty closely in its variations the specific gravity of the urine, being higher when the specific gravity was higher, lower when the specific gravity was lower. But in the first three days this correspondence was not present. The specific gravities of the first four days run thus: 1035, 1030, 1021, 1022, while the urea percentages are 1·35, 1·2, 1·45, 1·65. At the height of the disease a low percentage of urea was found in urine of high density, and then while the specific gravity diminished the percentage of urea increased.

Casts.—In the urine drawn off soon after admission, hyaline and granular casts were found, but not in great numbers. After this similar casts were occasionally found, but they were never numerous. On the day following admission a deposit of lithates took place when the urine cooled, and this continued to be the case until after delivery.

At no time was any sugar found in the urine.

Remarks.—The case illustrates the general rule for which we are indebted chiefly to the researches of Bourneville, as to the absence or slight degree of pyrexia in cases which recover.

But the chief interest of the case lies in the observations which were made upon the renal function. At the

height of the disease the urine was greatly diminished in quantity; in other words, the amount of fluid passing from the vessels through the kidney tubes was greatly lessened; but the small quantity of urine that was passed was of very high specific gravity. From this we may infer that the lessening of the quantity of urine was not altogether because there was less matter to be eliminated, but mainly because less fluid passed through the kidneys to carry it off. It seems as if the renal cells did their duty as well as they could, in preparing matter for the water to carry off, and that, however imperfectly their function was performed, it was yet better done than that of the vascular arrangements whose function it is to provide the water for the solution of the solid urinary constituents; that in this case at least the disturbance of the circulation through the kidney was the greatest and most influential of the misfortunes which happened to it. We have seen also that the urea was diminished, not only absolutely, but at the height of the disease proportionately to the other solids. That is, that the renal cells failed to separate that which is the most characteristic product of their activity, and which, being less diffusible than most of the other solid constituents of urine, is the one requiring the most special arrangements for its elimination.

As the patient became convalescent, the first thing re-established was the due proportion of urea to the other solid matters. Then came increase in the quantity of urine, including all its constituents.

We have, therefore, first a partial stoppage of the flow of water through the tubes. The renal cells, notwithstanding, struggle to do their duty, they manage to get into the urine the saline constituents; but they fail adequately to perform their most difficult task, viz. the elimination of urea. As the stress of the disease passes off, they first regain the power of doing their work in a proper manner, and then, having succeeded as to quality, they regain their wonted standard as to quantity.

The albumen present in the urine was mainly para-

globulin, the most diffusible kind of albumen. The circumstances in which paraglobulin is found in the urine (apart from eclampsia) are such as to warrant the belief, according to my colleague Dr. Ralfe, that its presence is due rather to altered pressure in the vessels than to changes in the renal cells. This, with the persistence of the albuminuria until the end of pregnancy, although all other signs of renal disease had passed off (a course which I believed has been observed in other cases of eclampsia of pregnancy), goes with other general facts, viz. the preponderating frequency of eclampsia in first pregnancies, and towards the end of pregnancy, to show how very important a factor increased pressure is in the production of the disease.

A survey of the chart also shows us how very large is the margin on the side of safety in the ordinary working condition of the kidneys; that the grave symptoms of eclampsia occur only with very great disturbance of the renal function; and that only a partial restoration to normal conditions is enough to enable the kidneys to do their work well enough for the needs of the organism.

The absolute quantity of urea was throughout below the average usually considered that of health. In the first week, that of the fits, it averaged 165 gr. per diem. In the second week, that of undisturbed pregnancy, 339 gr. In the third week, that of delivery, 299, and in the fourth week, 238 gr. per diem.

But the question suggests itself, whether the average of individuals generally is that of females during pregnancy and lying-in. I have collated the results of investigators into the urea excretion of pregnancy and lying-in, but they differ so widely as to make one think that either the analytical methods must be very defective, or else very large and continued departures from the average are consistent with health.

Taking first the pregnant condition, Barlemont*

* "Modifications de la Nutrition pendant la grossesse," 'Thèse de Paris,' 1869.

examined the urine of twenty pregnant women, at periods from the third to the ninth month, and the figures he gives average 158·9 gr. per diem. (He took for comparison the urine of six non-pregnant women, and found the average daily excretion of urea to be 271·5 gr.)

Chalvet* made twelve analyses of the urine of patients in the later months of pregnancy. The daily urea excretion averaged 106·5 gr. According to these investigators, therefore, the urea excretion in pregnancy is much diminished.

Quinquaud† found the opposite, that the amount of urea excreted in twenty four hours much surpasses the physiological mean. According to him it is from 450 to 570 gr. per diem. He does not give details as to the number of observations upon which this statement is founded.

These are the only investigations, so far as I can find, that have been made into the state of the urea excretion during pregnancy; and in the face of the wide discrepancy between them, all that we can say is that we do not know that there is any characteristic difference between the amount of urea excreted during pregnancy and at other times.

As to urine in the lying-in period, we have the researches of Winckel. These I have not been able to see in the original. In the summary of them contained in his work on puerperal disease, Winckel does not state that there is any marked difference between the excretion in health and that in the puerperal state.

Kleinwächter‡ made 179 examinations of the urine of lying-in women. His conclusion is that the quantity of urea excreted is very near the normal.

Klemmer§ investigated the effects of different diet upon lying-in women, including, among other points, the urea

* 'Unpublished Researches,' quoted by Barlemont, op. cit.

† 'Essai sur le puerperisme infectieux,' Paris, 1872.

‡ 'Archiv für Gynäkologie,' Band ix, S. 370.

§ 'Winckel's Berichte,' 1876.

excretion. He found that the diet made a very great difference. In patients on a diet containing much meat, the average excretion of urea was 777 gr. per diem. In those put on "egg diet" (four eggs daily for first three days, seven eggs daily afterwards, together with the usual milk, bouillon, &c.) it was 598 gr.; and in those on "mixed diet" (meat once a day) it was 392 gr. These researches go to show that in patients on the ordinary hospital diet, which is much the same as that adopted by most lying-in women, there is no marked alteration in the amount of urea excreted during the lying-in period as compared with the excretion of health.

APPENDIX.

I add notes of another case, observed since the above paper was written. The record is unfortunately somewhat defective, but it illustrates some points in the history of the disease. The chief point which the case shows is the deficient excretion of urea during the height of the disease, a deficiency not only absolute, but relative to the amount of urine passed and the amount of solids contained in that urine; and the rapid restoration of the urea excretion which accompanied the cessation of the fits.

K. G—, aged 18, admitted August 19th, 1887, at 8.45 p.m. Her previous history was not obtained, because the patient was unconscious, and after recovery did not remember what had happened; and her friends did not come when desired. But it was ascertained that it was her first pregnancy. She was brought to the hospital on account of the fits.

At 9 p.m. she had a fit.

At 10 p.m. another fit. There was no cry. The spasms were bilateral. There was complete loss of consciousness. No urine or fæces passed in the fit. (Rectum empty, and urine had shortly before been drawn off.) Pulse, before fit, 64; immediately after, 144; one minute after, 72,

Fœtal heart, counted after fit, 160. Patient completely comatose after the fit.

10.45 p.m.—Another fit.

Treatment.—On admission, the patient had been given two drops of croton oil. As this had not acted, an enema of two pints of soap and water was now given, but returned immediately without any fæcal matter. Hydrate of chloral and bromide of potassium, ʒss of each, were given by a feeding-tube, as the patient could not swallow.

At 1 a.m. patient was seen by Dr. Herman. The fundus uteri reached halfway between the umbilicus and ensiform cartilage. The external os uteri would not admit the finger, and there was no perceptible shortening of the cervix. Slight œdema of legs and face, not of hands. Patient not anæmic. Pulse of full volume, but not hard. From this time the temperature was taken every hour, and the catheter passed every two hours.

1.30 a.m.—The patient was put in a warm bath at 100°, and kept there for half an hour. She was quiet while in the bath, but no marked change in her condition was noticed. After removal from the bath she was wrapped in hot blankets, but did not sweat at all. A hot-air bath was then given for forty minutes, which produced slight moistening of the skin.

2.50 a.m.—Patient, who was apparently sleeping quietly, had another fit. This fit was on the right side only.

3 a.m.—Another fit; bilateral.

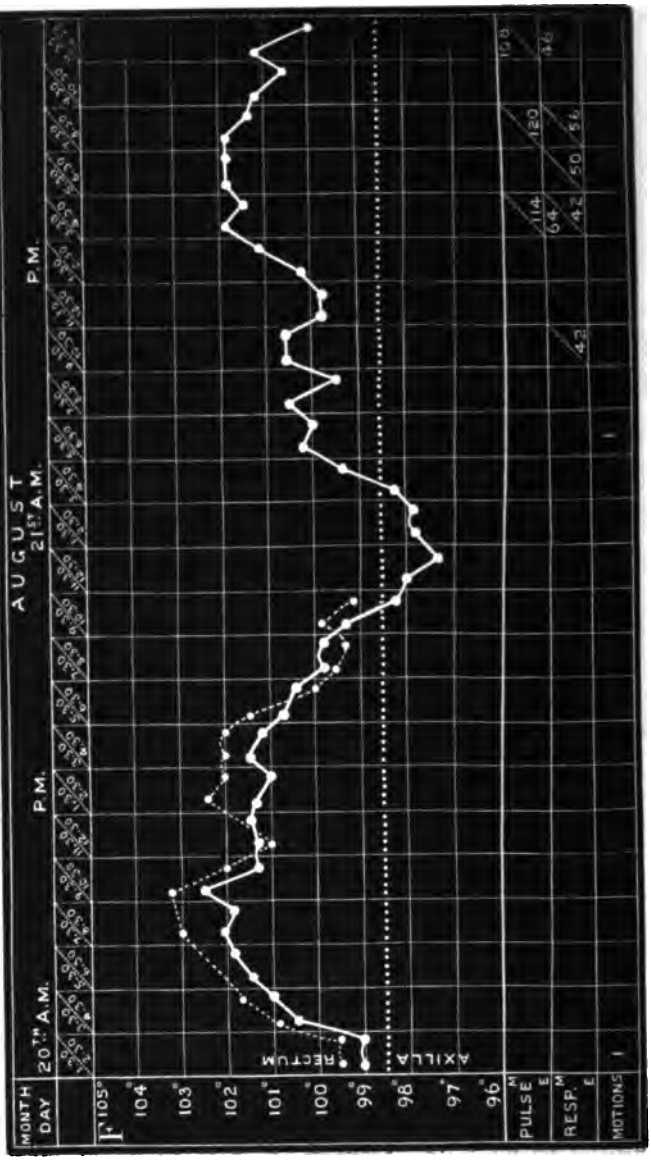
3.5 a.m.—Another fit; bilateral.

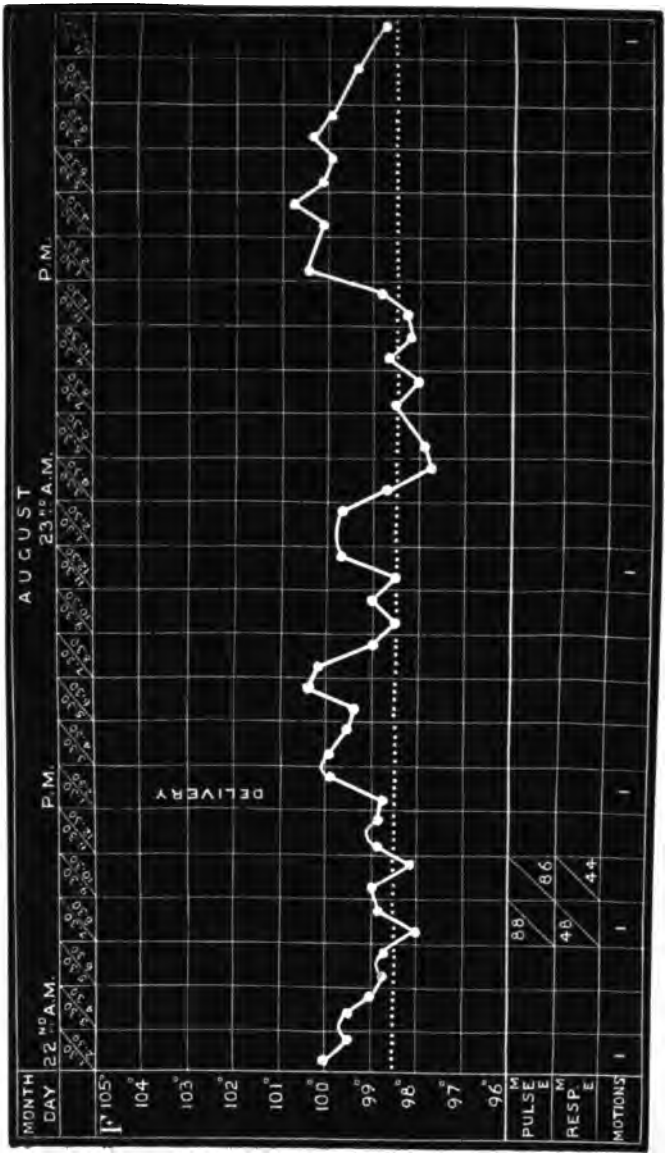
3.10 a.m.—Half a grain of morphia, with $\frac{1}{100}$th of a grain of atropine, was injected under the skin. After this no more fits occurred.

3.30 a.m.—Comatose with stertor.

5.30 a.m.—Face perspiring.

August 20th, 2 p.m.—Seen by Dr. Herman, and the following notes made. Cervical canal obliterated; os externum just admitting finger. Retinæ examined with difficulty owing to restlessness, but nothing abnormal seen. Heart's apex below fifth rib, and within nipple line; impulse


AUGUST
20TH A.M.
P.M.
21ST A.M.
P.M.
MONTH
DAY
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
RECTUM
AXILLA
PULSE
RESP.
MOTIONS
108
46
120
114
64
42
50
56
42


MONTH
DAY
AUGUST
22nd A.M.
P.M.
23rd A.M.
P.M.
DELIVERY
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
PULSE
M
E
88
86
RESP.
M
E
40
44
MOTIONS

not exaggerated; presence or absence of murmur cannot be detected owing to mucous râles. Pulse 136, resp. 32. Slight inspiratory sinking of epigastrium. Face swollen, but patient not deeply cyanosed. She breathes noisily, with audible moist râles, and lies as if comatose, but is now and then restless, and makes movements of resentment when meddled with.

8.15 p.m.—Pulse 116, Resp. 26. Râles less noisy, hardly any sinking of epigastrium.

10.30 p.m.—Patient slightly conscious, complains of thirst and asks for drink. Very drowsy, but rouses if touched.

21st, 10.30 a.m.—Os uteri just admits finger. Pulse 120, Resp. 42.

22nd, 10 a.m.—Labour pains present.

2 p.m.—Child born without assistance, dead and decomposing, between seven and eight months intra-uterine age. No post-partum hæmorrhage.

23rd.—Patient conscious, rational, and cheerful. Eyelids and legs still œdematous. Says she cannot remember the child being born, and did not know what had happened. Has no idea how long she has been ill, and asks what was the matter with her.

Recovery after this was uninterrupted, except for cough, bronchial râles, and dyspnœa, which were troublesome for about a week. During the coma the mucus was wiped away from the mouth and fauces by a sponge on a holder. In this operation a bit of sponge got detached, and stuck in the posterior nares. This set up a good deal of inflammation of the mucous membrane around it, which subsided after the sponge had been removed.

Urine.—1. *Quantity.*—When the patient was admitted, about 9 p.m., 1 oz. of urine was drawn off. At 1 a.m. the catheter was passed, and 1 oz. drawn off. At 3·20 a.m. the catheter was passed, but the bladder was empty. No urine was passed in the fits. At 5.20 (the fits having now ceased) 1 dr. of urine was drawn off. At 7.35 the catheter found the bladder empty. At 9.30 the bladder

was empty. (Temperature now at its maximum.) At 11.30 1 oz. 1 dr. of urine was withdrawn. (Temperature had now began to fall.) From this time onwards the secretion of urine was comparatively free. 1.30 p.m. 1 oz., 3.30 1 oz. 2 dr., 5.30 2 oz., 7.30 2 oz., 9.30 2 oz., 11.30 2 oz. Delivery was followed by copious diuresis. Child born at 2 p.m. At 3.30 p.m. 14 oz. drawn off, at 6.30 24 oz.

Summarized, these figures show that the secretion of urine was deficient during the period of the fits, and after the fits had ceased, so long as the temperature continued to rise; and the fall in temperature and re-establishment of the urinary secretion coincided.

2. *Specific gravity.*—That of the urine drawn at 1 a.m., August 20th, was 1044. Of the urine between 1 a.m. and 1.30 p.m., mixed for the purpose of testing the sp. gr., 1028. Of that between 9·30 p.m. and 11.30 p.m. 1025.

Thus a very high specific gravity coincided with the fits and the scanty urine, and the specific gravity sank as the secretion became more abundant.

3. *Reaction.*—This was acid throughout.

4. *Albumen.*—The urine passed on admission, and each specimen up to 1.30 p.m., when boiled, became solid from precipitated albumin, so that when the test-tube was turned upside down it did not run out. By 11.30 p.m. the amount of albumen had sunk to about half. It continued about the same until delivery. At 6.30 p.m., August 22nd, it contained only a trace.

5. *Urea.*—As already mentioned, the analyses of urea were incomplete.* The urine drawn off on admission contained only ·7 per cent. of urea. That drawn off at 3.30 p.m. contained 1 per cent. The specimen obtained at 9.30 p.m. on the 20th, 2·3 per cent. That at 5 a.m. on the 21st, 2·3 per cent.

* Every specimen was examined: but subsequently the reagent used was found to be impure. Fortunately a few specimens had not been thrown away and these were tested with a pure reagent. The results are given in the text.

Thus with the fits there coincided, not only a diminution of the water in the urine, leading to increase of the specific gravity, but a great diminution in the percentage of urea. In the process of recovery, first more water passed through the kidneys, lowering the specific gravity of the urine, and then the excretion of urea became re-established.

6. *Deposit.*—The urine drawn off on admission became turbid on cooling from urates. It contained numerous granular casts, two or three being found in each field of the microscope. The precipitation of lithates on cooling continued till 3.30 p.m. on the 20th, after which the urine was clear. Hyaline and granular casts were numerous until 3.30 a.m. on the 21st, when they became few. After delivery they quite disappeared.

Temperature.—The temperature at the time the fits were most frequent was 99° in the axilla, 99·5° in the rectum. Shortly after the last fit it was 100·4° in the axilla, 100·9° in the rectum. After this it continued to rise for six hours after the last fit, reaching a maximum at 9.30 a.m. of 102·5° in the axilla, 103·2° in the rectum. Then it gradually fell, reaching normal at 11.30 p.m. On the following day there was a rise of temperature, reaching 102°; the maximum occurring about the time at which the maximum of diurnal variation usually is present—between 3.30 and 7.30.

This behaviour of the temperature suggests that the rise of temperature may be due to changes consequent on the fits. At present, so far as I know, there have not been enough observations of the temperature in eclampsia published to enable us to construct a chart typical of the temperature in this disease. But those that have been published, and that I am acquainted with, seem to me more consonant with the view that the temperature is due to the fits, than with the supposition that the fits are the result of a febrile disease.

A CASE OF BRIGHT'S DISEASE DURING PREGNANCY.

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(Received July 6th, 1887.)

(*Abstract.*)

The author describes a case of Bright's disease, manifested by œdema, headache, and albuminuric retinitis, occurring in pregnancy, and treated by the induction of labour in the eighth month of pregnancy, about seven weeks after the commencement of symptoms. The excretion of urea daily was measured during the weeks preceding and following delivery. The author compares the ascertained excretion of urea in this case with that in a case of eclampsia previously communicated by him to the Society, and shows that, in the case of Bright's disease without eclampsia, the amount of urea excreted, although below the normal, and below the amount excreted by the eclamptic patient after the disappearance of the eclamptic symptoms, was yet considerably larger than the amount excreted by the eclamptic patient at the time the symptoms of eclampsia were present. The author says that the view that "eclampsia is due to deficient excretion of urea, and the occurrence of eclampsia in a woman suffering from Bright's disease depends on the amount of urea excreted," was not a novel one. But it rested on inference, and had been little if at all supported by direct observation, because it was seldom that the opportunity for observation occurred in circumstances favourable for accurate observation. These cases were evidence in support of that view.

The author also calls attention to the resemblance between the two cases in respect of the facts that the excretion of urea was larger during pregnancy than during the lying-in period, and that rapid diminution in the amount of albumen present in the urine followed delivery. He also draws attention to the different kinds of albumen present in the two cases; in the case of eclampsia (coming on in a subject who appeared to be previously healthy, and ending in complete recovery) the albumen was mainly paraglobulin; in the case of Bright's disease there was a copious precipitate of serum albumen, but very little paraglobulin. This was in accordance with the views of Ralfe and of Maguire. In the case now reported, the Bright's disease was still present three months after delivery.

It is not a novel proposition that the fits of puerperal eclampsia are uræmic, *i. e.* due to deficient excretion of urea, and that the difference between cases of Bright's disease in pregnant women with eclampsia and those without, depends upon whether or not the kidney disease is such as to greatly lessen the power of the kidney to eliminate urea.

But this view has not been universally admitted, and, so far as I know, it has been supported only by arguments based on our knowledge of kidney disease generally, and not demonstrated by observations on the amount of urea excreted by pregnant, puerperal, and eclamptic women.

In a former communication to this Society I described two cases of eclampsia in which the amount of urea excreted was measured throughout, and the observations showed that the fits coincided with a great diminution in the excretion of urea.

In the present communication I relate a case of Bright's disease coming on in a pregnant woman and treated by the induction of labour. The patient passed through labour and lying-in without eclampsia. The amount of urea excreted was estimated daily. The course of the renal function in this case offers a marked contrast to that of the cases recorded in my former paper.

Mrs. P—, aged 21, was admitted into the General Lying-in Hospital, April 8th, 1887.

The notes of the case were taken by Dr. George Mallack Bluett, house physician.

Previous history.—Had measles in childhood, scarlet fever very badly when aged eight; also smallpox very badly, although said to have been vaccinated twice. Rheumatic fever when aged sixteen, laid up for six weeks, but recovered well. Except for these illnesses, patient thought she had previously had good health. Began to menstruate at the age of fifteen, was never regular, the interval varying from six to ten weeks. Flow lasted four days, was moderate in quantity, and only rarely attended with pain. After marriage the menstrual pain became increased. Her first child was born February 18th, 1885. Patient was well throughout pregnancy; was delivered with forceps. The child is living and healthy.

Patient last menstruated from August 4th to 9th, 1886. Thinks she conceived on August 11th. Vomiting began at the end of August; used to occur directly after eating. It made her feel ill and lose flesh. It was at its worst about the fourth month, and ceased at about the time she quickened, which was about the beginning of February. Appetite was variable, but generally poor, throughout the pregnancy; bowels confined. Slept well, but since the time of quickening has had to get up several times in the night to make water.

About six weeks ago she found her sight becoming dim, and began to suffer from severe headache, the pain extending across the temples, with nausea. The eyelids were much swollen, especially in the morning, and she had a good deal of aching pain in them. She also had a slight cough, but beyond these no other symptoms till three or four days ago, when her feet and ankles began to swell. Three weeks ago, on account of defective sight, she applied for advice at St. George's Hospital, where she was seen by Mr. Frost, who, having in view the question of the induction of premature labour, referred her to Dr.

Champneys. Dr. Champneys sent her to the General Lying-in Hospital.

On admission (April 8th) patient was pale, thin, and slightly anæmic. Slight œdema of feet and of labia. Abdomen rather more distended than usual at the period assigned by patient to her pregnancy; walls thin; fluctuation present. Greatest girth thirty-four inches. Fundus uteri one and a half inches above umbilicus, eight inches above pubes. Fœtal heart audible. Cardiac dulness extends to left slightly beyond nipple line. Apex-beat below fifth rib slightly within nipple line. First sound prolonged, but no murmur. No abnormal signs on examination of lungs. Liver not enlarged. On vaginal examination, cervix lacerated bilaterally; its canal will not quite admit two fingers. On the anterior wall the projection of the os internum can be felt, but not on the posterior. The canal measures about an inch in length. Sacral promontory cannot be felt by digital vaginal examination; external conjugate measures seven and three quarter inches. On ophthalmoscopic examination, there is well-marked albuminuric retinitis; numerous white spots and patches in both retinæ, the left being more affected than the right. For the first five days of her stay in hospital the patient was kept at rest in bed. She was allowed such food as she could take, but her appetite was very poor, and there was persistent nausea. Vomiting only occurred once. Headache continued.

April 13th.—On vaginal examination, the projection anteriorly marking the upper boundary of the cervical canal could no longer be felt. During the next four days the patient was allowed to get up. She took food better, and there was no more vomiting. Headache rather better. Patient very restless. There was no further sign of commencing labour.

17th, 11.30 a.m.—The usual antiseptic precautions having been taken, a bougie was introduced between the fœtal membranes and the uterus.

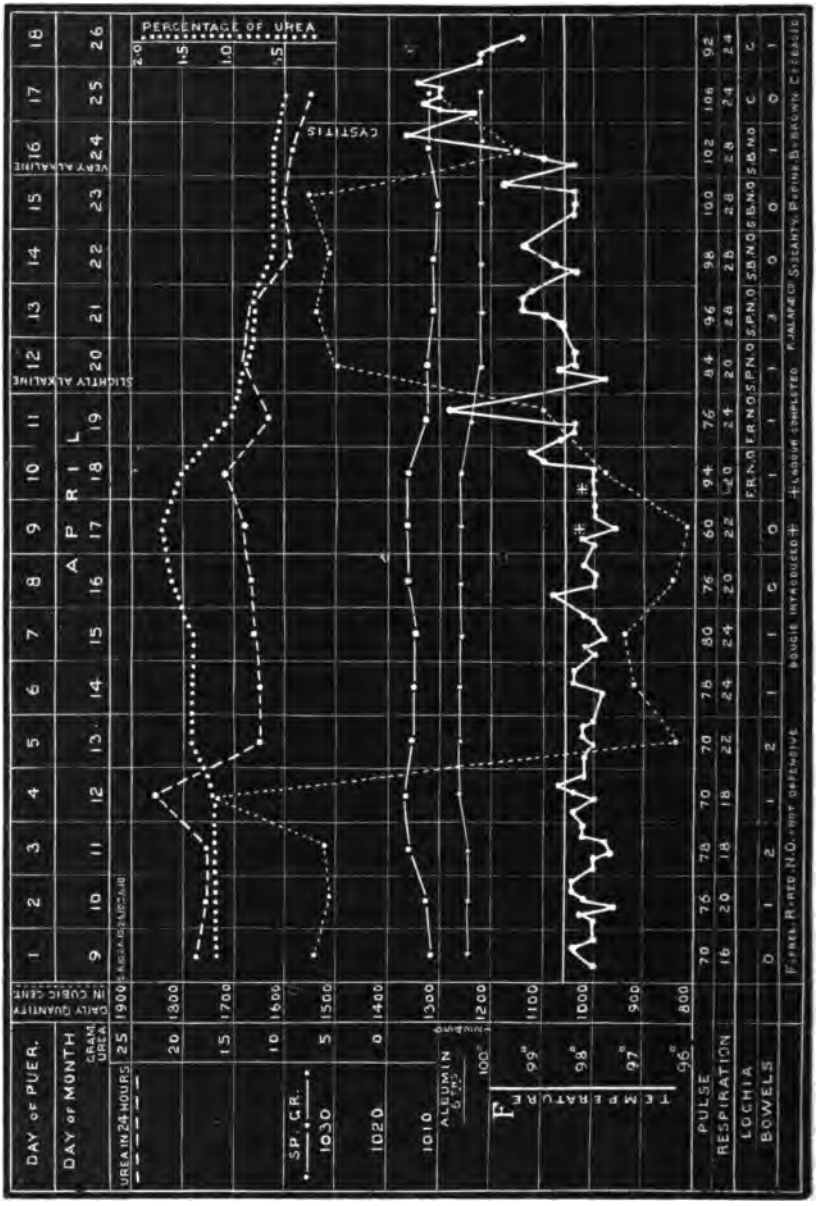
18th, 2.25 a.m.—The membranes ruptured sponta-

neously. The presentation was the third cranial. At 3.30 a.m. the os was fully dilated, and almost immediately after this the child was born. Very little hæmorrhage in the third stage. Child was 17 inches long, and weighed 3 lbs. 11 oz. Placenta weighed 12 oz.

The patient passed through the period of lying-in without further unfavourable symptoms. The lochial discharge was rather copious during the first two days, ceased to be sanguineous on the fifth day, and ceased altogether on the eighth day. The abdomen, after delivery, remained large and fluctuating, but this gradually diminished; on the third day of lying-in it measured 33 inches, on the fourth 32½ inches, on the fifth 31 inches, and on the eighth 29 inches. The headache persisted; it was more severe some days than others. It became less severe after a purge had been given. Patient's sight did not appreciably improve; she said her sight was worse when the headache was worse. Appetite somewhat improved. The secretion of milk was scanty, probably partly because the child being premature and feeble, did not suck well, and the milk had to be artificially drawn from the breast for it. The child died on the twelfth day.

Temperature.—This was taken from three to six times daily throughout the patient's stay in hospital. Until delivery it was normal. On the evening of the second day after delivery there was a rise to 100·8°, but it became normal again the next day. The cause of this slight rise was not discovered. On the seventh and eighth days after delivery there was another slight rise, having 101·6° as its maximum; this was thought due to cystitis, which became troublesome about that time. The temperature was normal again on the ninth day.

Urine.—Throughout the whole of the patient's stay in hospital it was attempted daily to collect and measure all the urine passed by the patient, and estimate the amount of urea contained in it. The urine was at first drawn off every six hours by the catheter, and directions were given that the catheter was also to be used when the bowels


DAY OF PUER.
DAY OF MONTH
GRAM. UREA
UREA IN 24 HOURS
DAILY QUANTITY IN CUBIC CENT.
SP. GR.
ALBUMIN
TEMPERATURE
PULSE
RESPIRATION
LOCHIA
BOWELS
PERCENTAGE OF UREA
CYSTITIS
APRIL
SLIGHTLY ALKALINE
VERY ALKALINE

were going to act, so that the whole, or almost the whole, urine might be obtained. This was done during the first three days. The patient after this complained very much of the use of the catheter, and therefore the necessity for collecting the whole of the urine was explained to her, and she was allowed to pass it herself, promising to be careful to pass it separately before any action of the bowels. It is probable, however, that when the patient was thus trusted to, a larger amount of urine escaped measurement than when the catheter was used. After delivery the urine was again regularly withdrawn by the catheter. But unfortunately cystitis set in, and by the eighth day after delivery the urine was so strongly ammoniacal that it was clear that much of the urea must have been decomposed before analysis could be made; and the attempt to estimate its amount was therefore from this time discontinued. The analyses were made by Dr. Bluett, with Squibb's apparatus (the hypochlorite process), the quantities calculated according to the method given by Squibb, and corrected for barometric and thermometric conditions according to the tables given by Dr. Hingston Fox. In order to test the accuracy of the method employed by Dr. Bluett, I on three occasions took home a sample of the urine he was about to examine, and determined the amount of urea in it with Gerrard's apparatus (the hypobromite process). Twice out of the three times my result exactly agreed with that independently obtained by Dr. Bluett. On the third occasion there was a difference of about 10 per cent., which may possibly have been due to a slight fault in manipulation on my part.

Quantity.—During the first four days of the patient's stay in hospital, the quantity of urine passed averaged 1570 cubic centimetres (about 49 oz.) per diem. Then the chart shows a sudden drop to a little more than half this quantity, and this apparently small excretion continues until the day of delivery, on which day and the two following days there is a steady rise. The third, fourth, fifth, and sixth days after delivery showed an

average of 1520 cubic centimetres (or 47½ oz.) per diem. After that the quantity again drops. The dates of these sudden variations coincide with the dates of leaving off and recommencing the withdrawal of urine by the catheter, the sudden drop occurring when the patient's own care in preserving the urine was trusted to, and the rise coinciding with the resumption of the catheter after delivery. The fall later on occurred when the cystitis, accompanied with vesical irritability, was becoming troublesome. The conclusion follows that the great magnitude of the difference was probably due to the patient's imperfect fulfilment of the instructions given to her, and that the secretion of urine, during the period in which the catheter was not used, was probably greater than is shown on the chart.

Specific gravity.—On admission this was 1011. It gradually rose until the fourth day after admission, when it reached 1016. Then it continued to be either 1015 or 1016 until the day of delivery. After this it fell gradually, till on the sixth day following delivery it was at 1010. This steady persistence of the specific gravity at the same level throughout the days marked by the sudden and great deficiency in quantity, strengthens the suspicion that the alteration in the amount of urine was not so great as appears on the chart.

Albumen.—When the patient was admitted the urine contained about half its bulk of albumen, estimated roughly by the eye, after the urine with the precipitated albumen had been allowed to stand in a test-tube. On the fourth day the quantity of albumen increased to about two thirds of the bulk of urine; and the urine then continued to contain about this quantity until delivery. On the days following delivery, the amount of albumen gradually decreased, on the third day being only one third of the bulk of urine. The quantity remained after this about the same during the rest of the patient's stay in hospital. On three occasions the paraglobulin was separately precipitated, in the same manner as in the

first case described in my former paper. On each occasion, viz. on the fifth and eighth days after admission, and on the third day after delivery, about one sixth only of the albuminous precipitate was found to consist of paraglobulin.

Casts.—Hyaline casts were seen on microscopical examination, but they were not numerous.

Urea.—The percentage of urea when the patient was admitted was 1·2. It remained the same until the fifth day, on which the patient was allowed to get up, and then rose to 1·4 per cent. It continued to rise until the day on which labour was induced, when it was 1·7 per cent. After labour the chart shows a continuous fall; but as during these days cystitis was developing, the apparently diminishing percentage of urea may have been due to its decomposition before the urine was examined. The line indicating the percentage of urea follows pretty closely that showing the specific gravity.

The *quantity* of urea passed daily during the first four days averaged 19 grammes, or 245 grains per diem. Then the chart shows a drop, coinciding with the great diminution in the quantity of urine already mentioned, and probably explained by the same cause. The average daily quantity of urea from this time till delivery was 13·1 grammes, or 196 grains. On the day of delivery it was 15·5 grammes, or 232 grains. Then it begins to fall gradually, the diminution in the later days being probably due to decomposition.

Remarks.—In this case the patient was suffering from Bright's disease, but had no eclampsia. When we compare the excretion of urea in this case with that in the cases of eclampsia we see a striking difference. In the case of Bright's disease the quantity of urea ascertained to have been excreted was throughout below the average of health. The patient had a poor appetite, and this is one reason why there should have been a diminution in the urea excretion. But it is probable, for reasons which have been stated, that the figures on the chart do not

represent the whole of the excretion. Nevertheless, taking them as they are, and ignoring all suspicion that they err by being too low, they yet show a larger urea excretion than in the eclampsia cases during the week in which the fits occurred. But the excretion is below that of the eclampsia cases after the patient had recovered from the eclampsia. In the first eclampsia case and in this the excretion of urea during the lying-in period was rather less than that before delivery. In the case of Bright's disease the steady increase in the percentage of urea while the patient was in the hospital awaiting labour, is to be remarked, and I take it to have been due to the rest, and favourable hygienic conditions of hospital life.

These cases support the view that the essential condition of eclampsia is that the kidneys do not excrete enough urea; and that the reason why some cases of Bright's disease do not get eclampsia is that the kidneys, although diseased, yet eliminate urea well enough to protect the nervous centres from a poisonous dose of it.

Another point which this case, as compared with the first eclampsia case, illustrates, is the significance of the kind of albumen which escapes in the urine. In the eclampsia case it was mainly paraglobulin; in the case of Bright's disease, mainly serum albumen. These cases support the view of Ralfe* and of Maguire,† that paraglobulin is met with in excess in those cases in which the transudation is due to altered pressure in the vessels, while serum albumen is found in cases in which the kidney structure is diseased. The importance of the pregnancy as a factor in the causation of the albuminuria is shown by the great decrease in the amount of albumen which quickly followed delivery, alike in eclampsia and in Bright's disease.

An interesting point in the history of the case, although not bearing on the object of its publication, is the opening up of the internal os, and its obliteration as a palpable ring, at least a month before full term.

* 'Diseases of the Kidneys,' p. 107.

† 'Lancet,' 1886, vol. ii, p. 524.

Dr. GALABIN thought that much light might be thrown by careful observations such as Dr. Herman's on the obscure points in the relation of puerperal convulsions to albuminuria. His observations on the association of the convulsions with a specially defective excretion of urea were in favour of the view that an essential element in the pathology of most cases of eclampsia is a poisoning of the nerve-centres by the retention of some product through defective excreting power in the kidneys. He did not think that it absolutely followed that urea itself was that poison. Urea had been injected into the circulation of animals without producing any ill effect; and in uric acid we had an example of a product much more scanty than urea, but capable, in the human subject, of producing more ill effects. Possibly there might be some still more poisonous substance among those present in very small quantity and now classed as extractives, the excretion of which might fail when that of urea failed. He did not quite understand exactly what vascular condition of the kidneys Dr. Herman considered it to be which produced scanty excretion of water and was the cause of eclampsia. So far as it was a matter only of hydrostatics and hydrodynamics, the only vascular condition which could produce such an effect would be one of low pressure and anæmia. If congestion produced scanty secretion, it could only be through some intermediate condition of secreting cells. He did not think physiology justified us in holding that the kidney-cells were not concerned at all in the excretion of water. Even mechanically they would interfere with it, if the lumen of the tubes was blocked with irregular proliferating cells, as it often was in the eclamptic kidney. He thought that there was evidence to show that in many, if not all, cases of eclampsia the secreting cells of the kidney were affected as well as the circulation. First, in fatal cases, although to the naked eye the kidney might appear only congested, he had always found alteration of the cells evident on microscopic examination. Secondly, although in many cases the albuminuria disappeared rapidly after delivery, this was not universally true. In perhaps as much as one fourth of the cases, he had found that, although the proportion of albumen rapidly diminished, yet a little remained as long as the patient remained under observation. In one case he had found it persist nearly two years after eclampsia in a first pregnancy; yet the patient recovered perfectly and went through subsequent pregnancies without either albuminuria or eclampsia. He had observed a similar course after scarlatinal nephritis. It appeared, therefore, that, in some cases, eclampsia was associated with a Bright's disease somewhat chronic in its after-effects, but not necessarily incurable.

Dr. GRAILY HEWITT expressed his high appreciation of the value of Dr. Herman's paper. The subject was one most difficult of analysing, and no doubt the paper indicated methods of investi-

gation, which would produce valuable results. The remarkable frequency with which primiparæ suffered from eclampsia as compared with others had always attracted his notice. He thought it indicated that extreme tension of the abdominal contents, such as would be more likely to occur in primiparæ from the resistance of the abdominal muscles, was a very important factor. He had observed very good results from application of this idea in practice, first by so placing the patient as to take off pressure of the uterus from the spinal region as much as possible, and next by procuring copious watery stools by such medicines as the compound jalap powder. As regards the albuminuria, from the curious observation of Dr. Braxton Hicks, that sometimes albuminuria occurred first after the onset of eclampsia, was it not probable that the spasmodic action of the abdominal muscles added to the intra-abdominal tension and so produced the albuminuria? He mentioned a case in which eclampsia occurred first after labour and ended fatally where the one kidney was found the size of a walnut and the other much diseased.

Dr. CLEVELAND thought that, in puerperal eclampsia, connected with defective elimination of urea, some decomposition of urea must take place before its toxic effect on the nervous system was manifested. In uræmic coma such decomposition was evidenced by the urinous or ammoniacal odour of the breath. He thought albuminuria was rather loosely associated with convulsions, and that it was of greater importance to note the deficiency of urea, than the presence of albumen, in the urine. He would have been glad if the author could have given a satisfactory explanation as to the mode in which supposed pressure on the kidneys is said to produce eclampsia in primiparæ. He thought it probable that, in some cases, there was sudden and unusual congestion of the organ, which impaired its eliminating function and produced the albumen in the urine.

Dr. M. HANDFIELD-JONES agreed with Dr. Herman in thinking that the disturbance of the renal function in puerperal eclampsia was often due to changes in the vascular circulation of the kidney. He narrated the clinical history of a case in which normal urine was passed by a patient half an hour before delivery, and within three hours' time puerperal convulsions manifested themselves, and bloody urine, which became almost solid on boiling from coagulation of the albumen, was passed. Localized vaso-motor dilatation occurred commonly in various regions of the body, and in some of these cases the kidneys were undoubtedly affected in this manner.

Mr. JACOMB HOOD referred to two cases of puerperal eclampsia that had lately been in the Queen Charlotte's Hospital. The first, under the care of Dr. Grigg, was sent in about the beginning of the ninth month. She had had a two months' abortion ten months before. No other pregnancies. A week before admission

her urine became scanty and albuminous. On admission it contained five eighths albumen. There was much œdema of legs and abdomen. A bougie was introduced and she was delivered in twelve hours' time, without a bad symptom. During the next day she passed sixty ounces of urine with two fifths albumen. She was freely purged, and on the second day she passed eighty ounces with only a trace of albumen. She had no bad symptoms nor albumen, nor any rise of temperature until the sixth day, when she had convulsions for three and a half hours gradually getting less severe. After this her temperature was 99·8°, the highest it reached at any time. A trace of albumen appeared in the first urine drawn off after the convulsions, but none was found subsequently, and she left the hospital convalescent on the fourteenth day. At no time had she any eye trouble, but she complained of headache the first few days after delivery. No casts were found after delivery. The second case was under the care of Dr. Hope. She was a primipara of nineteen with an old Pott's curvature of the spine. On admission there was a faint trace of albumen in the urine. No œdema anywhere; she was not in labour. Twenty hours after admission labour began. At 4 a.m., Nov. 19th, having been twelve hours in labour, and two hours in the second stage, she suddenly complained of blindness, and five minutes later had a strong general convulsion lasting about three minutes. Her urine was drawn off and contained one fifth albumen. She was delivered with forceps under chloroform, and during the next hour and a half had six more convulsions, for which chloroform was given. She was unconscious and did not recover consciousness for four hours after delivery. She was quite blind, and her temperature was then 100°, having been 97·8° after the last convulsion. On the fifth day after delivery she had three convulsions due apparently to irritation caused by the baby not emptying her breasts well. After these convulsions her temperature rose to 101°. She was treated by free purgation and sweating, the latter by means of a warm pack and pilocarpine. The albumen disappeared on the day after delivery, but a little reappeared on the fifth day after the convulsions. She gradually recovered her sight, and went out on the fifteenth day able to read small type. No casts were found at any time. The ophthalmoscope showed slight pallor of the disc, but no retinitis.

Dr. BOXALL remarked that, though our understanding of the physiology of the renal function leaves much to be desired, we may at any rate go so far as to distinguish in the kidney an outer cortical, filtering and secreting portion (uropoietic), and an inner medullary or pyramidal portion (uriniferous), whose function it is to convey the fluid formed to the pelvis of the kidney. Pathologically also the same distinction may be preserved—one portion may be pale and anæmic, the other engorged

with blood. In the majority, if not all of the fatal cases of puerperal eclampsia which have come under his notice, the cortical portion of the kidney, if not actually diminished in area, was pale and anæmic, whereas the pyramids were congested, swollen, and standing up above the general surface of the section. Thus, altogether apart from any primary change in the secreting cells, it seems highly probable that the engorged blood-vessels of the pyramids lying between the tubules may exert pressure from outside to such an extent as to markedly diminish the lumen of the straight or collecting tubules, and may thus prevent the free outward passage of the fluid formed in the cortical portion, just as inflammation of the nipple offers an impediment to the escape of milk from the breast. The increased intratubular pressure thereby induced, acting backwards towards the glomeruli, may not only tend to diminish the amount of fluid produced in the glomeruli and in the convoluted and looped tubules, but, as a secondary effect, may exert such an injurious influence on the secreting cells of the tubules as to interfere greatly with their secreting power. At the same time the anæmic state of the cortical portion itself tends to aggravate the evil, and ultimately, no doubt, destruction of the delicate secreting tissue may be effected. But, apart from this, mere congestion of the pyramids, in association with anæmia of the cortical portion, appears to be quite sufficient to produce the variations observed in the urine.

Dr. PARAMORE expressed his belief that there must be a peculiarly impressionable nervous system in those women who suffer from puerperal convulsions, as it could not be proved whether the congestion of the kidneys which caused the uræmia was the result of the eclampsia, or, as was generally believed, the cause of it. Puerperal eclampsia occurred most frequently in primiparæ, and oftentimes when in apparently excellent health, and certainly did not invariably happen in women who had albuminuria. In two severe cases which occurred in his own practice delivery was terminated by the forceps; but the convulsions lasted for three days in one case and four in the other. Chloral and bromide of potassium were given in large doses and both cases recovered, which fact made him believe the fault was not necessarily due to the retention of urea in the blood, as he could not conceive that chloral was an antidote to that poison. He considered there was no prophylactic comparable to chloral and bromide of potassium in those patients who were liable to this morbid condition.

Dr. HERMAN agreed with Dr. Hewitt that we much needed information as to the typical course of puerperal eclampsia. This disease was so very acute, running its course as it usually did within forty-eight hours, that extremely frequent observations were necessary in order to get a true picture of the phenomena. A large number of cases observed with great minuteness and frequency were required to construct a picture of the typical

course of the disease. Eclampsia was not a common disease, and most of the cases could only be observed at the patients' homes, where very detailed and frequent record was impracticable. Had it not been for this consideration he should have waited till he could bring forward a larger number of cases. He did not attach so much weight as Dr. Galabin did to the objections which were made to the uræmic theory of the disease. Experiments on animals in which urea was injected into the blood without harm following he did not think conclusive, because those animals had healthy kidneys, which could excrete the urea. If, as in eclampsia, urea was not excreted, it did not follow that it must accumulate in the blood; it might be, as his colleague Dr. Ralfe had suggested, in the tissues. He did not profess to be able to explain why the renal changes happened. He had not said that increased pressure within the abdomen was the sole causal condition, but he thought the greater frequency of the disease in circumstances in which the intra-abdominal pressure was increased, viz. in first pregnancies, and towards the end of pregnancy, rendered it probable that pressure was one of the causal conditions; and this view was supported by the rapid diminution in the amount of albumen which almost always quickly followed delivery. Even if the albuminuria persisted, as in the cases mentioned by Dr. Galabin, there was almost always a drop in the amount of the albumen. The case mentioned by Dr. Handfield Jones was a very important one. If the views of Ralfe and of Maguire as to the significance of the presence of paraglobulin and serum albumen respectively in the urine should be shown by observation in a large number of cases to hold good, they would prove of great value in prognosis. He did not think that all cases of eclampsia were alike, for on post-mortem examination the renal changes met with were of the most various kinds; acute nephritis, large white kidney, granular kidney, dilatation of ureters and pelvis of kidney, were each sometimes met with, and in other cases there was no naked-eye appearance of kidney disease, and these were the cases the possible analogy of which to acute atrophy of liver had been suggested by the late Dr. Angus Macdonald.

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